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MEMPHIS' MUNICIPAL SOLID WASTE MANAGEMENT SYSTEM: A CASE STUDY

Applied Management Sciences, Incorporated

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This study examines the solid waste collection and disposal system in Memphis, tennessee. The background of the system, including location, geography, demography, climate, form of government, and the solid waste management agencies is described, and the characteristics of the system, including the services, equipment, and finances are discussed.

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A Case Study

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U.S. ENVIRONMENTAL PROTECTION AGENCY
1974

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FOREWORD

Solid waste management systems are an integral part of the environment of nearly every citizen in the United States. Yet until recent years, these systems have not received the attention other visible residential services have enjoyed. This historical neglect has resulted in systems which may not be cost-effective, especially with respect to the rising cost trends encountered in solid waste management activities. These trends arise from two principal factors:

* Environmentally sound disposal methodology is being enforced or strongly encouraged; as a result, disposal sites and needed equipment are now expensive to procure and operate.

* The collection function is highly labor intensive. Thus, the costs of unskilled labor, which have been rising to meet socioeconomic demands, have had enormous impacts on local agency budgets.

This rise in cost pressure has forced all levels of governmental organizations to consider more closely the management and costs of solid waste management activities.

Because efforts to upgrade solid waste management practices are in their infancy, there is still an obvious lack of data bases for evaluative and comparative analyses. This case study is one in a series of case studies of solid waste management systems which has been conducted under the sponsorship of the Office of Solid Waste Management Programs, U. S. Environmental Protection Agency. Kenneth Shuster and Cindy McLaren served as EPA project officers on the case study reported herein. The purpose of these case studies is to fill in this data gap with actual case histories of how cities are handling their solid waste problems.

Concerned agencies at all government levels, as well as private firms, will be able to assess information of the following types:

* The management and operating characteristics of public sector solid waste management systems.

* The institutional forces which give rise to these characteristics.

- Those techniques that have been or are being applied to enhance the measures of productivity, aesthetics, level of service, and environmental control.

These agencies and firms can then use these comparisons to upgrade their systems according to the norms achieved in other cities of similar size, geographical location, and operational and institutional characteristics.

--ARSEN J. DARNAY
Deputy Assistant Administrator
for Solid Waste Management

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INTRODUCTION

Major changes have been made in the solid waste management system of Memphis, Tennessee, in recent years. A serious labor strike in 1968 involving a large number of sanitation employees marked the beginning of many changes in the collection system. The settlement ending the strike resulted in higher labor costs, and this led the city to hire a consultant firm which provided a districting and routing plan to reduce manpower requirements. This plan has been modified in a number of ways since it was implemented in 1969.

The disposal system has been greatly altered by virtue of a new State solid waste disposal law. Because of the topological and hydrologic characteristics of the Memphis area, existing landfill sites were declared environmentally unsound, and 10 proposed sites were also rejected on the same grounds. A reasonably suitable site ~~has~~ was at last ~~been~~ found, but it is quite far removed from the collection routes. In order to improve the effeciency of the disposal operations, three transfer stations are planned.

The city is studying the possibility of recovering energy from its solid waste at the local TVA power plant. A proposal for a demonstration project was presented to the EPA in May 1972 but was rejected during the final evaluation procedures. The city is now exploring this concept through other approaches.

As in any growing city, the solid waste system in Memphis continues to be in transition; the problems are by no means solved. Since the changes that have come about or that are now developing, and the precipitating circumstances, are not unique to Memphis, however, an account of the experience thus far may well be of use to others in similar situations. It is the purpose of the following case study to provide such an account.

Figure I presents the titles of the people either interviewed during the site visit or contacted in subsequent telephone calls. The types of information obtained are also indicated. Tape recordings of all conversations were made after obtaining the permission of the interviewee, and no one rejected this request.

The structure of this report consists of five chapters and four appendices. Chapter 2 synopsizes the system for those readers who are interested only in the parameters of the city and the collection and disposal operations. Chapter 3 presents our findings and identifies potential problem areas. Chapter 4 is a description of the city in terms of those parameters which affect solid waste management operations. Also included in this chapter are descriptions of the different public and private sector agencies on all levels found to impact on the system. Finally, Chapter 5 is an in-depth description of the solid waste management system as a whole. All aspects of the system are presented and, wherever appropriate, tabular data is included.

TITLES	DATE	INFORMATION TYPE
Director, Division of Sanitation Services	March 21, 22	General System Characteristics, Problem Areas, History
Sanitary Engineer, Division of Public Works	March 21, 22	Disposal History, Problem Areas, Plans, Characteristics
Planner, Mississippi, Arkansas, Tennessee Council of Governments	March 21	Regional approaches to solid waste management, Interaction with city requirements
Representative, Memphis Chamber of Commerce	March 21	General characteristics of the city
Chief, Solid Waste Control Section, Division of Pollution Control, Memphis/Shelby County Department of Public Health	March 23	The interaction of state, county, and municipal policies on solid waste disposal practices
Chief Building Inspector, Shelby County	March 23	Profile of level of service, quality of service, and disposal.
President and Business Manager, American Federation of State, County and Municipal Employees	March 23	Labor management relations from the union's perspective
Planner, Economic Development Administration, Memphis State University	May 31	System effectiveness and history

FIGURE 1: DATA SOURCES AND INFORMATION TYPES

2

SYSTEM DESCRIPTION ABSTRACT

City: Memphis, Tennessee

Contacts:

Maynard Stiles - Director, Division of Sanitation Services

Wayne Neibel - Sanitary Engineer, Division of Public Works

Thomas E. Wellman - Mississippi, Arkansas, Tennessee Council of Governments

William C. Rucker - Chamber of Commerce

Chuck Nance - Chief, Solid Waste Control Section Division of Pollution Control Memphis/Shelby County Department of Public Health.

Chris Sanidas - Chief Building Inspector, Shelby County

Leamon Hood - President and Business Manager, American Federation of State, County and Municipal Employees local 1733

John Gibson - Planner, Economic Development Administration, Memphis State University.

Dates of Visit: March 21 - March 23, 1973

Population Demography:

Date	Total	White	Other
1970	623,530	379,224	244,306
1960	497,524	312,799	184,725
1950	396,000	--	--

Area: 217 square miles

Density: 2873 people per square mile

Mileage: 3000 miles of roads
250 miles of alleys

Collection: Table 1

Miscellaneous: The Division of Sanitation Services is responsible for the collection of virtually all solid waste generated in the city. Private sector collectors collecting commercial accounts are strictly regulated by a fee system based on the licensing of commercial stops. There are nine distinct public sector collection activities which require 1,423 men. The crew strength for mixed refuse collection averages 4.62 men due to the planned very high level of service and the extraordinary solid waste generation rate in the city. A collection fee of $2.50 per dwelling unit per month is a relatively new innovation and falls somewhat short of the costs of servicing a residential account.

Disposal: Table 2

Miscellaneous: The Bureau of Solid Waste Disposal of the Division of Public Works is responsible for the disposal of waste collected by city crews and will accept private sector trucks for a fee. The disposal site is relatively remote from the city and the average one-way distance is 20 miles. The choice of this site was made only after ten close-in sites were proposed by the city and rejected by the State Department of Public Health on environmental grounds. The city was one of many that requested EPA funds for a demonstration grant to recover energy from solid waste. Although the request was rejected, the city is continuing to pursue this project with the local TVA power plant.

TABLE 1

COLLECTION ABSTRACT

Collection Variables / Collection Function	Mixed Refuse	Trash	Bulky Items	Shredded Leaves	Mechanical Sweeping	Hand Sweeping	Alley Cleaning	Panning Crews	Night Commercial
Number of crews	209	223	59	24	11	16	8	4	14
Crew size	4.62	4.33	2.54	3	2.36	1	5.13	4.75	3.57
Frequency of Service	2/week	1/week	on request	3/year-seasonal	varied	1/day	3/year	NA	varied
Point of Collection	Back yard	curb			roadway	roadway	alley	gutter	alley or curb
Method of Collection	Carry-out using special dolly	Nothing Specified	Rotoboom crane when required	Leaf vacuum Truck	Mechanical Sweeper	Nothing Specified			
Stops	184,733	----	----	----	----	----	----	----	9387
Service Limitations	Unlimited collection from containers 20 & 30 gallons will also collect from curbside at the same time	collectors use judgment for items which may require bulky collection equipment	NONE						Same as mixed refuse
Incentive System	TASK		NONE						TASK
Fund Source	General Fund and visible fee of $2.50/dwelling unit/month								Fee schedule
Tonnage (annual)	471,248 tons	108,864 tons	404,595 cu. yd.	230,000 cu. yd.	13,665 curb miles	13,050 curb miles	770 alley miles	1263 curb miles	36,076 tons
Unions	American Federation of State, County, and Municipal Employees Local 1733								
Annual Cost	$5,246,006	$1,311,516	$1,019,347	$489,279	$176,689	$108,707	$278,598	$156,295	$339,762
Comments	High level of service offered but there are "catch-up" problems waste generation rate very high	There is a considerable amount of vegetal waste in the trash component.	Waste generation rate is very high. It was stated that there is a bulky item "inventory" now in the city which will take several years to collect.	This is regarded as a serious problem by the city	----	----	This is reported to be a problem in the inner city area	----	Two types: close-in centralized routes and dispersed city-wide routes

TABLE 2
DISPOSAL ABSTRACT

Disposal Site / Disposal Data	1	2	3	4
Type	Landfill (city)	Landfill (Pvt)	Landfill (county)	Pathological incinerator
Capacity	N. A.	N. A.	N. A.	1 ton/hr.
Real Loading	200,000 cu. yd/month	42,000 cu. yd. /month	40,000 cu. yd. /month	375 lb. /hr.
Expected Lifetime	5 years	------	------	not known
Operating or use costs to city	Use of land-$1500/yr. Operating costs $.38/ cu. yd.	Load basis, ranging from $.45 to $.55/cu. yd.	Not often used by city	$1500/month
Start-up costs	Eqpt. transferred from old site, land leased @ $1200/yr. initially	------	------	$122,000
Location	Shelby Drive and Malone Road	Sykes Road	County Penal Farm	------

3

FINDINGS AND CONCLUSIONS

The solid waste management system operated by the City of Memphis is designed to provide for the satisfactory collection and disposal of all of the solid wastes generated in the city. The city is responsible for the collection of all solid waste except that collected by the private sector. Private sector firms are closely regulated by a system of inspections and fees. In one case, due to annexation, the city deemed it not economically feasible to expand the collection system, so the added area was franchised to a private collector.

The City of Memphis has experienced a number of critical problems relating to its solid waste management responsibilities. The Public Works strike in 1968 was the most significant of these problems, especially in view of the factors that precipitated that event. It does not appear that the strike was really resolved to the satisfaction of both sides on all the issues; however, the pressures were sufficiently reduced to the point where they could be rationally addressed and solved. Since the strike, there is some evidence to suggest that the union has been fairly active in the local, non-partisan political arena. There is no doubt that the city is now being quite responsive to the needs of its employees and this finding is especially evident in the Division of Sanitation Services, where the practice of participatory management is being strongly fostered by a forward-looking system management that has expanded communication with the union.

A second significant impact in the collection function was the implementation of a mathematical districting and routing plan devised by a consulting firm. This event resulted from the city's finding that many of its residents were not receiving the twice-per-week level of service required by ordinance and to do so would include the expansion of the collection staff by about 200 men at a direct labor cost of nearly $1 million. In view of rising costs in other city functions, this was a significant burden which would be difficult to carry. The implementation of the computer scheme was reported to be quite successful, since the additional 200 men were not hired and the staff was further reduced by 47 men. Since the implementation of the plan, the analytic model was modified twice to 1) correct for route overlapping and 2) accommodate the significant shift in the disposal site location. The impact of these changes has not been ascertained. The system will be further modified to fit the introduction of three transfer stations expected to be implemented in October of 1973.

The disposal function in Memphis has also suffered impacts that have been difficult to resolve. As a result of the Tennessee Solid Waste Disposal Act, the city was forced to abandon all disposal operations at close-in and convenient sites and to transport solid waste to a site quite remote from most of the collection routes. It must be noted that there was no choice in this decision due to the topological and hydrological characteristics within the city boundaries. The city obviously recognized the ultimate results of the state-imposed constraints and vigorously pursued concepts relating to local disposal. Among these was an energy and secondary material recovery proposal submitted to the Environmental Protection Agency in the spring of 1972 in response to the "208" demonstration grant solicitation. Although the preproposal and proposal documents were carefully developed and justified, the city did not receive a grant because its concept closely resembled an existing system that was previously developed under Environmental Protection Agency sponsorship. The city is still confident in its proposal, and with the local TVA power plant, is seeking another funding agency.

At this time, there appears to be a problem with both the level and quality of service provided to some city residents. The collection frequency in some areas of the city is less than twice per week for mixed refuse and has been said to be unpredictable and quite poor in a number of cases. There are many contributing factors for this finding: these are discussed in Chapter 5 and will not be presented here. The quality of service, over and above the level of service, is also insufficient in a number of areas. This problem is less amenable to quantification as it is related to socio-economic factors and the public/private split of collection responsibilities. This, too, is discussed in Chapter 5.

Since the solid waste management system in Memphis is still in a state of transition, the configuration of both the collection and disposal functions will change significantly. The transfer stations and certain special collection fleet additions will have a large and beneficial impact because these innovations will 1) eliminate a significant travel time requirement to the disposal site and 2) enhance the collection capabilities in areas of the city very difficult to collect. These new approaches are not expected to have a negative affect on labor management relations. A positive effect is likely to result.

Other significant impacts to the collection function include the policy of annexation which is rapidly increasing the population and the area requiring solid waste collection and other public services. The city approaches this requirement in a very pragmatic way. If the city deems it not economically feasible to expand its service capabilities to meet the new demand, it franchises the operation to the private sector. There is no reason to expect any change in this policy.

The disposal operation is now reasonably successful. The implementation of a resource recovery disposal methodology may be an improvement over the current system, providing it is found to be economically feasible. Such feasibility can only be determined upon examination of the project results but all evidence points toward success.

In view of the historical problems that have been encountered in the Memphis solid waste management system, the city has responded with careful thought and planning. This policy is not expected to change so it is likely that the system may eventually evolve into a model to be emulated by other cities with similar characteristics and problems.

4

BACKGROUND OF THE SYSTEM

Memphis is located on the east bank of the Mississippi River in the extreme southwest corner of Tennessee where the States of Tennessee, Arkansas, and Mississippi meet. The Memphis Standard Metropolitan Statistical Area (SMSA) consists of Shelby County, Tennessee (including six incorporated municipalities), and Crittenden County, Arkansas. This region had a population of 770,120 in 1970, making it the forty-second largest SMSA in the nation. The inclusion of DeSoto County, Mississippi (1970 population 35,885) in the Memphis SMSA is currently under review by the Bureau of the Census.

The area was first inhabited by settlers in the sixteenth century, following DeSoto's discovery of the Mississippi River in 1541. The French and Spanish built forts in succeeding years on the strategic bluffs overlooking the Mississippi River. The Chickasaw Indians finally sold their claim to the area in 1818. Shelby County was established by the State Legislature in 1819, and the City of Memphis was incorporated in 1826 with a population of 500. During the nineteenth century, the city experienced race riots and a yellow fever epidemic that resulted in a temporary loss of the City Charter in 1878 due to ensuing bankruptcy. The Charter was regained in 1893 during a major clean-up program in the city.

Of special significance to the history of Memphis was the adoption of a commission form of government in 1909 and the election of Edward Hull Crump as Mayor of Memphis. Mr. Crump controlled the politics and city administrative structure of Memphis until his death in 1954. He has been credited with restoring law and order to the City of Memphis and initiating many reforms, especially the creation of the City Beautiful Commission. Since 1930, this organization has been responsible for gradually erasing the impression of Memphis as a decaying river port. Memphis now boasts the title of "the Cleanest City in the Nation," and it has been awarded the Trigg Trophy award six times.

4.1: Location, Demography, Economic Base, and Climate

Memphis is located at latitude 35° North and longitude 90° West at an altitude of 331 feet above mean sea level on the east bank of the Mississippi River. The city covers 217 square miles and includes 153 wooded parks within its boundaries.

Memphis is the seventeenth largest city and second largest river port in the United States. The population in 1970 was 623,530, of which 39 percent was non-white. There has been an increase of approximately 30 percent in total population for every decade since 1900, when the population was just over 100,000. The labor force in Memphis has changed during this interval from an agricultural to an industrial base. The current percentages of the labor force in various employment categories is illustrated in Figure 2.

Employment Categories	Percentage of Labor Force
Manufacturing	19%
Government	15%
Agricultural, Self-Employed, Domestic and Others	14%
Service	14%
Retail Trade	13%
Wholesale Trade	8%
Transportation, Communications and Public Utilities	6%
Construction	4%
Finance, Insurance and Real Estate	4%
Unemployed	3%
	100%

FIGURE 2: EMPLOYMENT CATEGORIES

Shelby County covers 783 square miles and includes the City of Memphis and five other incorporated municipalities: Arlington, Bartlett, Collierville, Germantown, and Millington. The population of Shelby County has increased from slightly over 150,000 in 1900 to 722,014 in 1970 at a growth rate somewhat lower than that of the City of Memphis. The non-white population makes up 38 percent of the total; rural-farm population comprises 3 percent; rural non-farm 12 percent; and 85 percent is urban.

Crittenden County, across the Mississippi River in Arkansas, has one major municipality: West Memphis. The population of this county has grown from about 15,000 in 1900 to 48,106 in 1970. Current construction of a new bridge across the Mississippi River, linking Crittenden County to Memphis, is expected to spur growth in this area.

The Memphis SMSA had a total population of 770,120 in 1970, a rise of over 600,000 people from the 1900 population of 168,086. As a result, Memphis is the hub of the Mid-South region which comprises 105 counties in Alabama, Arkansas, Kentucky, Mississippi, Missouri, and Tennessee. This area had a total population of 3,348.936 in 1970, and Memphis has become its center for manufacturing distribution and office facilities.

The Memphis SMSA has approximately 900 manufacturing firms with an employment of 59,200 and an estimated annual earnings of $500 million. The SMSA ranked twentieth in the nation in wholesale trading in 1967. Retail sales were estimated at $1,383,476,000 and effective buying income for the SMSA at $2,263,744,000, and at $8,096,213,000 for the 105-county Mid-South region. The Mid-South area contains 24 percent of the country's farmland, devoted mainly to cotton and soybeans. Thus, food processing, hardwood processing, and cotton trading are major areas of commerce for Memphis.

The Memphis area enjoys a mild southern climate with an annual average of 238 sunny days and a mean annual temperature of 61.5° F. Rainfall averages slightly below 50" per year and snowfall is approximately 6" per year. The average relative humidity is 70 percent.

4.2: Form of Government and Organization

4.2.1: Form of Government

The legal basis for the Memphis City Government is provided by Chapter 11 of the Public Acts of the General Assembly of the State of Tennessee for 1879, as amended. In 1963 Memphis adopted a charter providing for local self-government or "home rule." A subsequent amendment changed the government in Memphis from a Commission form to a Mayor-Council form beginning January 1, 1968. The City Charter cannot, however, supersede the general state law.

The Mayor is elected every four years. He is the head of the executive branch of government, which consists of nine major divisions: Fire, Police, Budget and Finance, Personnel, Public Works, Public Service, Sanitation Services, General Services and Human Services. The Mayor appoints the Directors of these divisions, subject to City council approval. He is responsible for preparation of the city's annual budget, the capital improvement program, preparation of ordinances to be acted upon by the Council, and execution of the provisions of the City Charter and laws passed by the City Council.

The City Council consists of 13 members elected every four years on a non-partisan basis, seven from districts, and six at large. The principal duties of the Council are legislative, policy making, and budget. The Council meets one day a week in executive session, with afternoons open to the public.

Policy decisions for Memphis reside with the Mayor. He appoints the Chief Administrative Officer, the members of Boards and Commissions, the City Attorney, and the City Personnel Director. Thus the Mayor is the direct link between the public and the services provided by the city. He has the power of veto for City Council legislation, but can be overridden by a simple majority of the Council.

The Shelby County government is administered by a board of three commissioners elected at large for four-year terms. They are responsible for finance and purchases for Shelby County's health, welfare, institutions, bridges, roads, and the Penal Farm. They have appointive powers and jurisdiction over the county hospitals, Comptroller, Data Processing Center, Purchasing Agent, Building Department, Public Records, Social Service, and Information. A chairman is selected from among the Commissioners and is responsible for administration of finances, especially the Chairman's Fund with over 400 employees in 36 departments with a $31.5 million budget.

The setting of the county tax rate, the levying of taxes, and the initiation of bond sales are administered by a County Quarterly Court. This court is comprised of 11 magistrates elected for six-year terms, seven from separate districts and four at large. The Quarterly Court meets the first Monday of each quarter according to state law. It has a number of appointive powers, including County Attorney, County Board of Education, and Superintendent, Coroner, Public Defender, and Medical Examiner. An elected County Court Clerk maintains the records of the Quarterly Court as well as selling motor vehicle and marriage licenses and other duties.

4.2.2: Organization

The structure of the city government is listed in Figure 3. Until January 1, 1972, both the solid waste collection and disposal functions were handled by the Division of Public Works. A separate Division of Sanitation Services was then created to handle collection. The management of the solid waste disposal function remained with the Division of Public Works, along with responsibility for street and highway repairs, flood control, water pollution, and sewer and drain maintenance.

The organization for the Division of Sanitation Services is shown in Figure 4. This structure is now changing to accommodate the introduction of transfer stations, the first of which is expected to go into operation in October 1973.

The Shelby County government structure is illustrated in Figure 5. Those portions of the county organization operated jointly by the city and county are indicated by an asterisk (*).

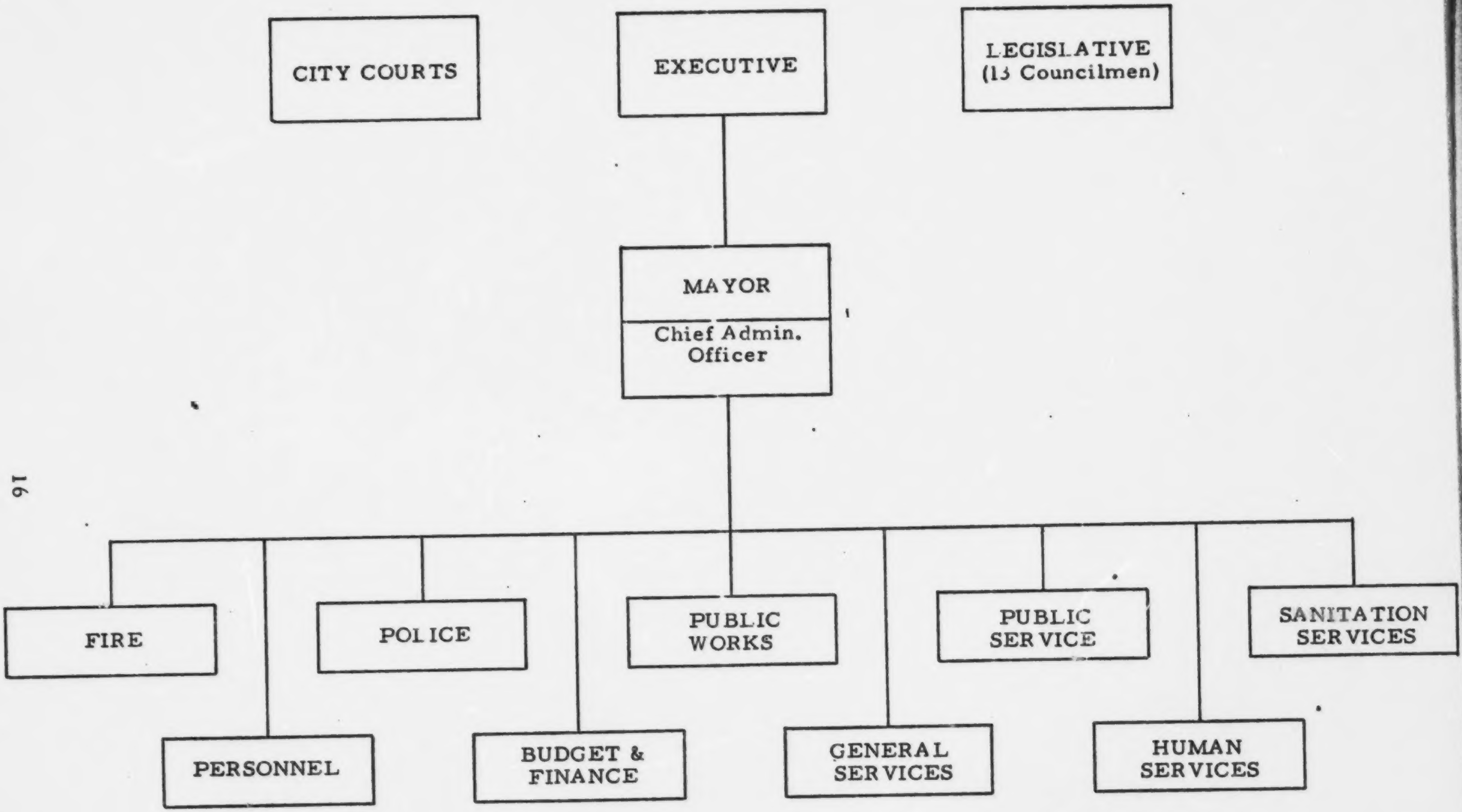

CITY COURTS
EXECUTIVE
LEGISLATIVE (13 Councilmen)
MAYOR
Chief Admin. Officer
FIRE
PERSONNEL
POLICE
BUDGET & FINANCE
PUBLIC WORKS
GENERAL SERVICES
PUBLIC SERVICE
HUMAN SERVICES
SANITATION SERVICES

FIGURE 3: MEMPHIS CITY GOVERNMENT

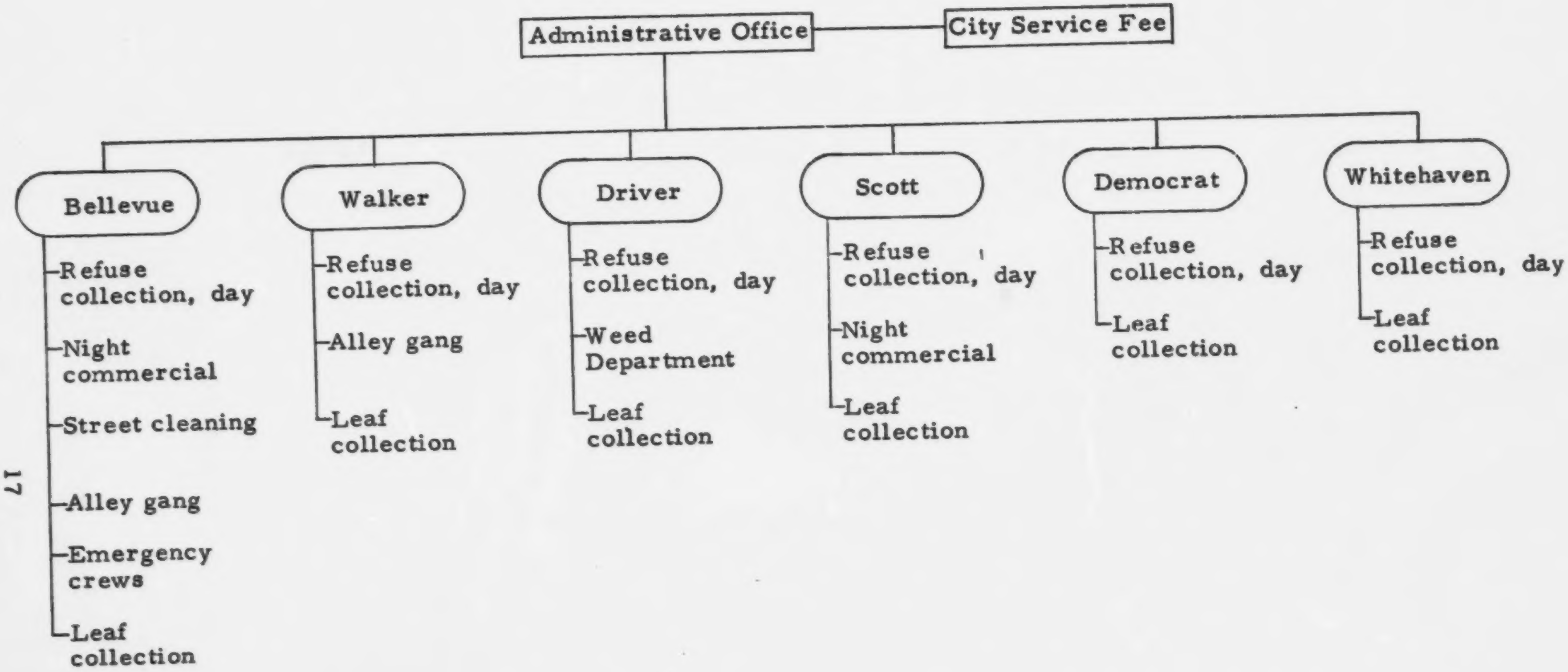
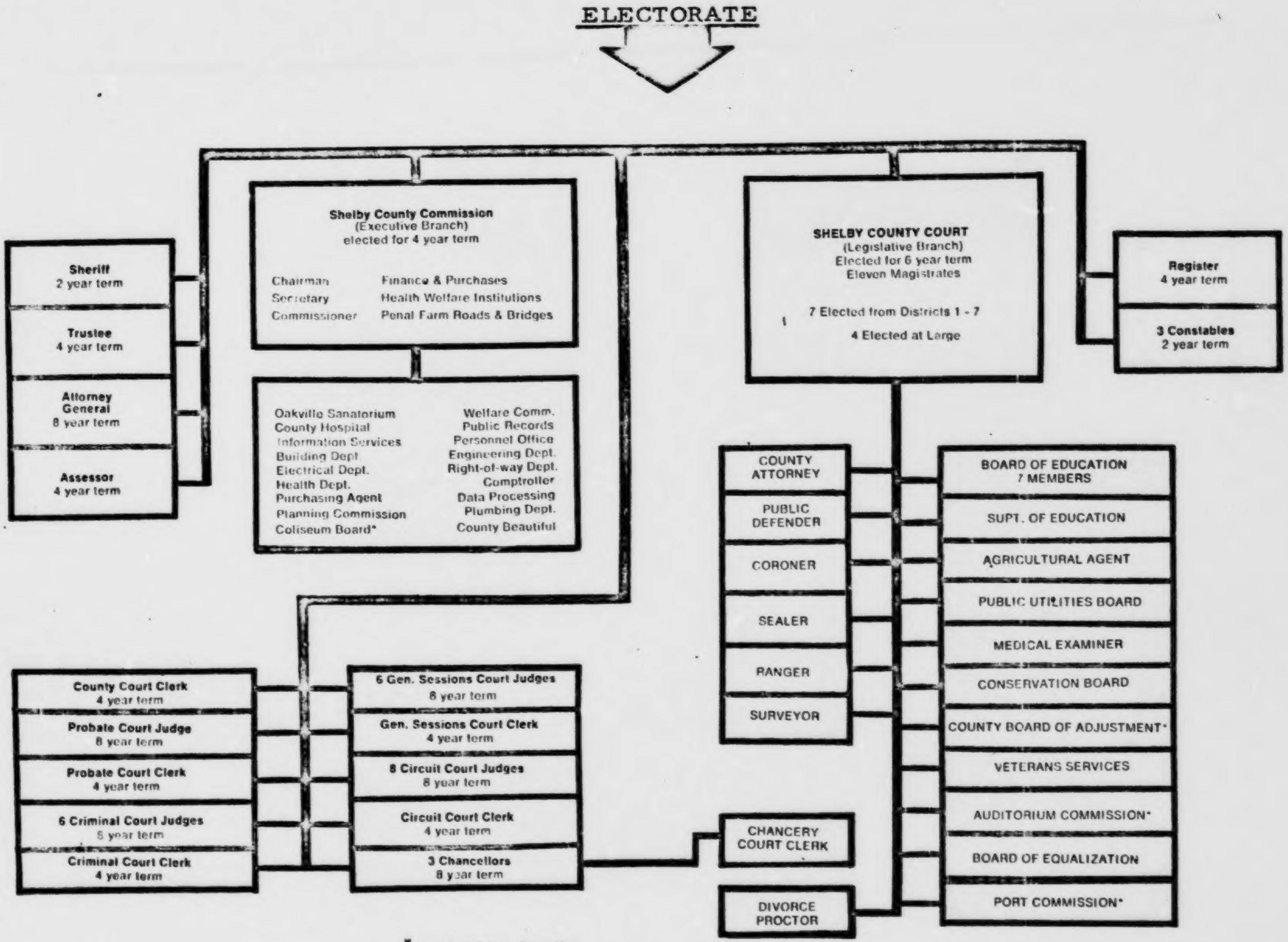

Administrative Office
City Service Fee
Bellevue
Refuse collection, day
Night commercial
Street cleaning
Alley gang
Emergency crews
Leaf collection
Walker
Refuse collection, day
Alley gang
Leaf collection
Driver
Refuse collection, day
Weed Department
Leaf collection
Scott
Refuse collection, day
Night commercial
Leaf collection
Democrat
Refuse collection, day
Leaf collection
Whitehaven
Refuse collection, day
Leaf collection

FIGURE 4: PRESENT ORGANIZATION - DIVISION OF SANITATION SERVICES


ELECTORATE
Sheriff 2 year term
Trustee 4 year term
Attorney General 8 year term
Assessor 4 year term
Shelby County Commission (Executive Branch) elected for 4 year term
Chairman
Secretary
Commissioner
Finance & Purchases
Health Welfare Institutions
Penal Farm Roads & Bridges
Oakville Sanatorium
County Hospital
Information Services
Building Dept.
Electrical Dept.
Health Dept.
Purchasing Agent
Planning Commission
Coliseum Board*
Welfare Comm.
Public Records
Personnel Office
Engineering Dept.
Right-of-way Dept.
Comptroller
Data Processing
Plumbing Dept.
County Beautiful
SHELBY COUNTY COURT (Legislative Branch) Elected for 6 year term Eleven Magistrates
7 Elected from Districts 1 - 7
4 Elected at Large
Register 4 year term
3 Constables 2 year term
COUNTY ATTORNEY
PUBLIC DEFENDER
CORONER
SEALER
RANGER
SURVEYOR
CHANCERY COURT CLERK
DIVORCE PROCTOR
BOARD OF EDUCATION 7 MEMBERS
SUPT. OF EDUCATION
AGRICULTURAL AGENT
PUBLIC UTILITIES BOARD
MEDICAL EXAMINER
CONSERVATION BOARD
COUNTY BOARD OF ADJUSTMENT*
VETERANS SERVICES
AUDITORIUM COMMISSION*
BOARD OF EQUALIZATION
PORT COMMISSION*
County Court Clerk 4 year term
Probate Court Judge 8 year term
Probate Court Clerk 4 year term
6 Criminal Court Judges 8 year term
Criminal Court Clerk 4 year term
6 Gen. Sessions Court Judges 8 year term
Gen. Sessions Court Clerk 4 year term
8 Circuit Court Judges 8 year term
Circuit Court Clerk 4 year term
3 Chancellors 8 year term

*Joint City County Operation

FIGURE 5: SHELBY COUNTY GOVERNMENT

4.3: Solid Waste Management System History

The collection and disposal operations in Memphis have undergone considerable change in the last few years. These transitions were initially due to changes in political structure and social strife in the city and then to a search for more efficient, and less costly, systems capable of meeting State requirements. In the early 1960's, the collection and disposal of solid waste was consolidated under the Division of Public Works, which provided once a week, back-door collection services and hauled refuse out to open dumps which lay in the flood plain of the Mississippi River.

A turning point occurred in January of 1968, when an amendment to the City Charter installed a Mayor-Council form of government in Memphis. The elected Mayor had received little support from the black community. He appointed directors to the various City Departments to replace the commissioners who previously had absolute authority with respect to the services they provided. At this time there was no formal contractual agreement between the city employees and the government, although attempts at organization had previously been made by the American Federation of State, County, and Municipal Employees. On February 11, 1968, the Union presented a list of demands which included: a newsletter recognizing the Union; a dues checkoff on the payroll; a safety program; a 15¢/hour salary increase; a minimum pay of $2.35/hour for men with at least five years of service; $3.00/hour for truck drivers; overtime pay of time-and-a-half after 8 hours a day; men not to ride in trucks carrying equipment or travelling over 45 mph; $6.97 to be paid to each man to purchase raincoats; and five 8-hour working days, rather than four 10-hour days.

The demands originally centered around the refusal of the sewer drainage maintenance workers to go out in the rain. They were, however, backed by most of the lower echelon workers, including those handling solid wastes.

The city felt itself unable to meet these demands. The Union interpreted this as having racial connotations and a strike was called on

February 12th. The city then set a deadline of February 15th for men to return to work and began hiring new employees after that date. Emergency services were started for solid waste collection, including 10-hour-per-day shifts, 7 days a week, with only once-a-week pickup at curbside.

The strike attracted national attention and black leaders from around the country visited Memphis to support the workers. As people harassed sanitation activities and civil rights marches were held, riots broke out, which necessitated control measures such as curfews and court injunctions. Dr. Martin Luther King visited Memphis several times to try for a peaceful settlement of the strike. The city, however, felt that the dues check-off from wages was the sticking point in the negotiations and continued to seek a compromise. The unfortunate assassination of Dr. King on April 4th in Memphis may have contributed to the settlement of the strike on April 17th.

Agreement with the Union was reached and included establishment of a seniority system, implementation of the task incentive system, and permitted dismissal or suspension of employees with recourse to arbitration. It was also found that all sanitation employees returning after the strike could not be used in the Division of Public Works. Other positions were found for the excess men.

In 1969, it was determined that the solid waste collection system in Memphis was inefficient and disproportionate in size. At this time, a consulting firm approached the city with a scheme for optimizing collection routes. The fee for these services was to be 10 percent of the first annual savings realized by the city, with a maximum fee of $125,000. The collection system in Memphis then required 1230 collection personnel (drivers and laborers), and it was estimated that an additional 200 men were needed. At an average salary of $2.00/hour plus 18 percent fringe benefits, this meant an additional revenue requirement of $981,600. The Director of Public Works subsequently presented the consultants' optimal routing report to City Council, won approval for implementation, and initiated the new routing scheme. By December of 1970 it was found that there was a 14 percent improvement in service, less gasoline was consumed, maintenance problems were reduced, and a reduction in the current collection force of 47 men could be effected. A total savings of $1,400,000 was realized.

Relocation of the disposal sites since the implementation of the optimization model has necessitated altering the computerized routing scheme. This has been performed manually and it is felt that these adjustments have not altered the effectiveness of the program.

On January 1, 1972, the Division of Sanitation Services (handling the collection function) was separated from the Division of Public Works which continued to administer solid waste disposal. The Division of Sanitation Services is in the process of altering its structure to accommodate its separate functions and the new transfer stations that are expected to go into operation within the next year. Figure 6 shows the temporary organization of this division as of January 1, 1973. The anticipated organization, when the transfer stations go into operation, is shown in Figure 7.

The solid waste disposal operation in Memphis has evolved independently of the collection system such that it is now operated by a separate division. A 1968 study of the city disposal sites showed that Memphis was operating open dumps. A search for new sites resulted in the suggestion of areas located within the flood plain of the Mississippi River and protected by earthen dams. These, however, were rejected by the State.

Solid waste disposal legislation enacted by the State of Tennessee in 1969 required State approval of all landfill sites. Compliance with this law was mandatory by July 1, 1971. Memphis began considering the problem seriously in early 1971 when budgetary allocations for the fiscal year had already been established for disposal. At this time, three open dumps were being operated. However, an additional $150,000 was made available to the Public Works Division disposal section to purchase new equipment. In the meantime, the State postponed the compliance deadline to July 1, 1972. A search for a new landfill site was initiated and the State

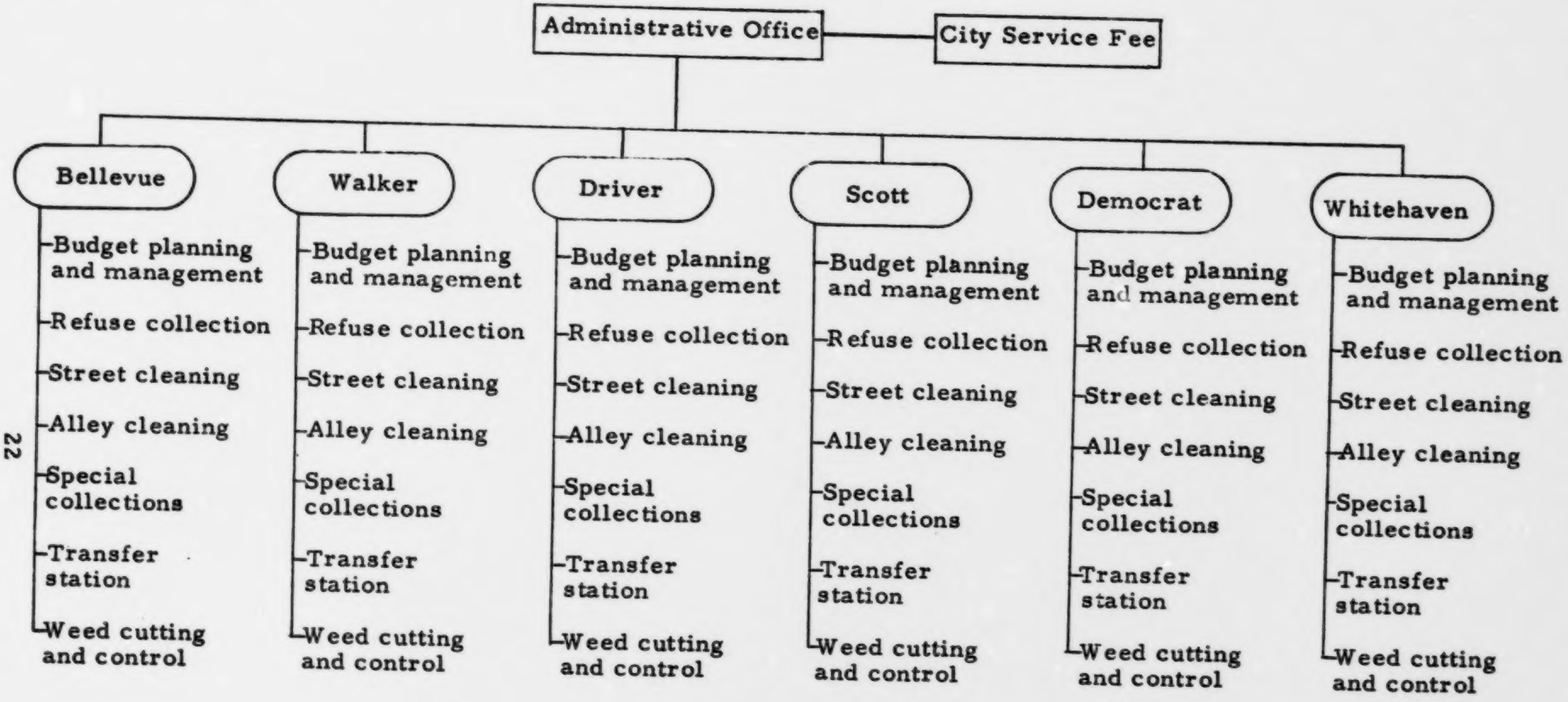
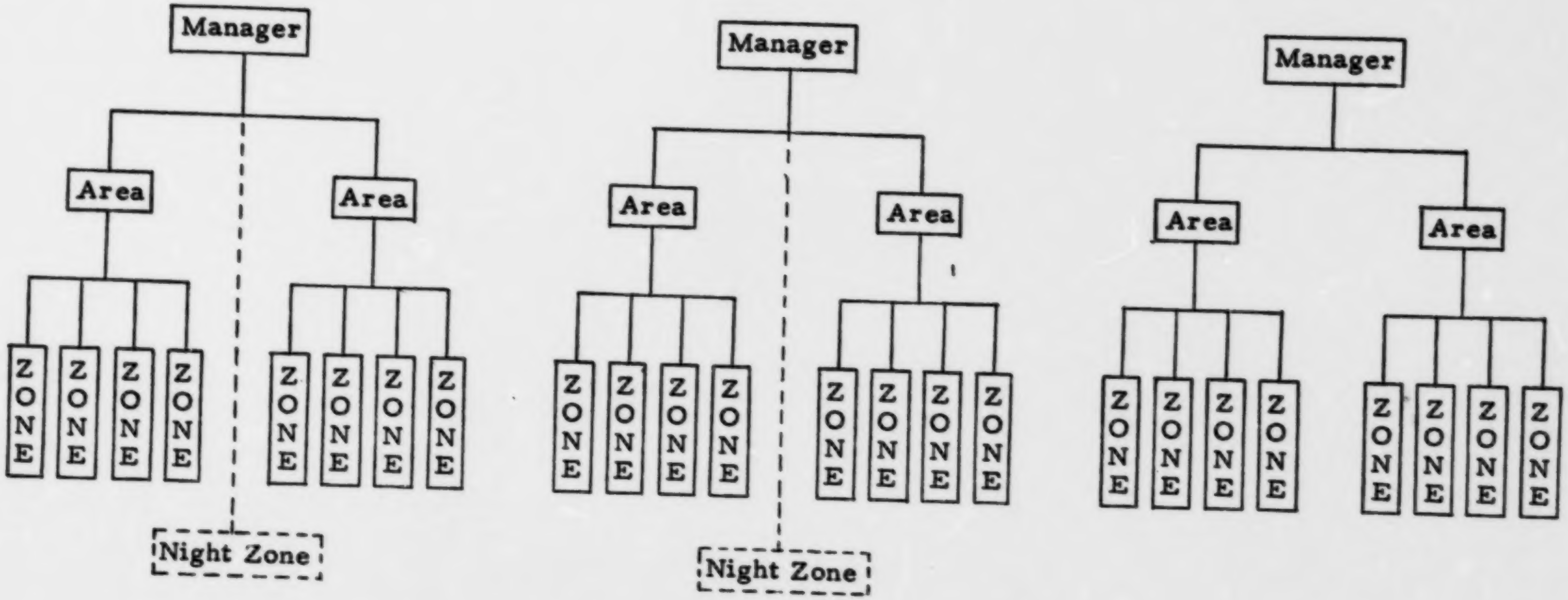

Administrative Office
City Service Fee
Bellevue
Budget planning and management
Refuse collection
Street cleaning
Alley cleaning
Special collections
Transfer station
Weed cutting and control
Walker
Budget planning and management
Refuse collection
Street cleaning
Alley cleaning
Special collections
Transfer station
Weed cutting and control
Driver
Budget planning and management
Refuse collection
Street cleaning
Alley cleaning
Special collections
Transfer station
Weed cutting and control
Scott
Budget planning and management
Refuse collection
Street cleaning
Alley cleaning
Special collections
Transfer station
Weed cutting and control
Democrat
Budget planning and management
Refuse collection
Street cleaning
Alley cleaning
Special collections
Transfer station
Weed cutting and control
Whitehaven
Budget planning and management
Refuse collection
Street cleaning
Alley cleaning
Special collections
Transfer station
Weed cutting and control

FIGURE 6: TEMPORARY ORGANIZATION DEPARTMENT OF SANITATION SERVICES (JANUARY 1, 1973)



INSTALLATIONS RESPONSIBILITIES AND FUNCTIONS

Transfer Operation
Refuse Collection, day
* Night Commerical
Street Cleaning
Alley Gangs
Emergency Trucks

Weed Cutting
Leaf Collection
Cleanup Projects
Vehicle Maintenance
Planning
Budget Management

---

* Two substations only

FIGURE 7: FUTURE ORGANIZATION DEPARTMENT OF SANITATION SERVICES

was consulted for approval on ten different locations, each of which was rejected because it lay in the flood plain. Finally, in April, 1972, the city chose a gravel pit that was approximately 20 miles from the City Center. The city hired a soil testing firm to investigate the site (soil borings showed a 35-foot strata of clay and little possibility of leaching into the sub-strata) and obtained a lease on 92 acres of this land. Because of the short lead time to meet the July 1, 1972, deadline for operating an approved landfill, only 25 acres of this site were prepared for operation. State approval of the site was obtained with the restrictions that sub-drains would have to be installed along the periphery of the site, or the sand or gravel strata that entered the site from the adjoining property would have to be sealed off. The site was registered under the new state regulations on June 15th, which left two weeks to implement site operation. A temporary road was quickly constructed. Rain hampered the operation most of the time, and the old dumps were forced to continue to accept refuse for a period of one week after the July 1 deadline. At this time, the new landfill was accepting approximately 12,000 cubic yards of solid wastes per day, half of which was brought in by city trucks, and the other half by private haulers.

Landfill operation has proceeded fairly smoothly at the new site since July, 1972. Controls have been placed on the type of wastes that can be disposed and liquid wastes are reluctantly accepted. Severe rainfall in the area has created operational difficulties, especially the accumulation of water in holes which have to be cleaned by pumping or digging deeper drainage ditches. Because of the adverse weather conditions in the latter part of 1972, it was not always possible to provide adequate cover material at this site. In January, 1973, when the weather cleared, an asphalt road was constructed, along with an office building and a 40' x 50' service shop for heavy equipment. Plans are now being made for increased budget requests for landfill equipment replacement and for state registration of the remaining land on the 92-acre site.

Because of the location of this disposal site (outside the city limits to the south, approximately 20 miles from the City Center), Memphis has also been using a privately owned landfill site on the north side of the city.

In addition, Shelby County has its own landfill located to the east of Memphis at the County Penal Farm, and this site is used by 30 city crews.

In order to reduce the burden of long haul distances on the collection system because of the distance to the disposal sites, three transfer stations are planned to be installed at strategic locations in the city (one at the intersection of N. Bellevue and Levee Road, another planned in the southeast near I-240, and the third in the southwest near Ford Street). These stations are expected to improve the efficiency of the system.

Thus, the anticipated solid waste system transitions for Memphis over the next five years will be the construction and operation of the transfer station system to aid collection and the state registration of additional area on the present 92-acre disposal site for landfilling. This is expected to provide sufficient lead time for studying newer systems such as energy recovery and recycling.

4.4: Agencies Impacting the Solid Waste Management System

There have been and are now a number of agencies on Federal, State, County, and local levels which have affected the operations of the Division of Sanitation Services in the city of Memphis. At present, however, the influence of these agencies is at a relatively low level because the system has reached a level of compliance which does not invite interference.

4.4.1: Federal Level Agencies

The only federal organization that has had any effect on the solid waste system in Memphis is the Environmental Protection Agency. Memphis was one of the many cities which responded to the pre-proposal solicitation to Section 208 in the spring of 1972. The essence of their proposal was to practice front-end recovery of marketable solid waste components, pulp the remainder, and pipe it to the site of the local TVA power plant. The next step in the process was dewatering and subsequent combustion in the power plant boilers.

Memphis did not receive the demonstration grant from the Environmental Protection Agency for this project. Although the specific reason was not made clear, it is suspected that the proposed process was too similar to one which had received a demonstration grant in an earlier solicitation. Although Memphis personnel were discouraged by this event, they are still negotiating with the TVA in exploration of performing the project without Environmental Protection Agency aid.

It is possible that this attempt to secure federal funds had an effect on the disposal function of the solid waste management system. It must be pointed out that there was a considerable delay in the procurement of a disposal site, which may have resulted from optimism on the outcome of the grant request. The delay could have been caused by the city management's desire to avoid the significant capital expenditures required to start up a new disposal site if the 208 project was to be approved.

4.4.2: State Level Agencies

The Tennessee Department of Public Health is the only State agency which has had significant impact on the solid waste management system in Memphis. Again, the effects have been felt only in disposal, but when transfer stations are constructed, the department will have regulatory powers over these facilities' operation.

The Department of Public Health is empowered by the Tennessee Solid Waste Disposal Act of January, 1971, to regulate solid waste disposal to:

> "(1) Provide for safe and sanitary processing and disposal of solid wastes.
>
> (2) Develop long-range plans for adequate solid waste disposal systems to meet future demands.
>
> (3) Provide a coordinated state-wide program of control of solid waste processing and disposal in cooperation with federal, state, and local agencies responsible for the prevention, control, or abatement of air, water, and land polution.
>
> (4) Encourage efficient and economical solid waste disposal systems."

To meet these objectives, the Commissioner of the Department of Public Health has been granted the appropriate powers to ensure that all solid waste disposal methods practiced are such that nuisance and health problems are avoided. He is empowered to approve all plans for disposal sites prior to construction and to impose penalties in the event that practiced disposal methods do not follow regulations. Appendix A is a copy of the Act.

Recent disposal history in Memphis clearly indicates that the State Department of Public Health is an effective regulatory agency. During the fiscal year of 1971-1972, Memphis submitted ten proposals for disposal sites and all were rejected by the state as unacceptable. Consequently, the city was forced to secure and start up the current site which is remote to the metropolitan area. This expensive choice would not have been made had the state regulations been more lenient. Even at this time, it is reported that state agents perform monthly inspections of the new site to ensure compliance with the law.

4.4.3: County Level Agencies

At the county level, there are two agencies which have had significant interaction with the Memphis solid waste management system. The specific relationships center around the disposal issue and are not particularly strong at this time.

Mississippi, Arkansas, Tennessee Council of Governments (MATCOG)

The MATCOG has been interested in regional approaches to solid waste management with particular emphasis on disposal alternatives. In October, 1972, the Memphis State University, Herff College of Engineering received a contract from MATCOG to survey existing solid waste management practices within the MATCOG planning area. The principal objective was to inventory the available data on solid waste management within the COG area. Specifically, the following objectives were to be met.

> "Accumulate data on existing solid waste problems and management practices within the MATCOG area,
>
> Define present problem areas deserving immediate attention
>
> Delineate short term problem solutions, and
>
> Formulate general guidelines leading toward a regional solid waste management plan."

The submittal date for the final report was April 1, 1973, which occurred after the site visit. However, an interim report submitted on March 2, 1973 included the following statement.

> "Several articles, reports, and studies have been written in recent years in the MATCOG area dealing with the management of solid waste disposal systems. Several studies outside the MATCOG area that provided a comprehensive and detailed analysis of disposal methods were also reviewed.
>
> It is the consensus of most of the studies reviewed that the biggest contributor to the generation of solid waste is the trend in packaging. This would include non-returnable and disposable containers of glass, metal, plastic and paper.

> In most urban areas reviewed, collection services are adequate. However, in unincorporated municipalities and in rural areas collection practices are inadequate. In rural counties, the establishing and maintaining of solid waste storage and collection systems is lacking.
>
> Disposal methods practiced include backyard burning, incineration, dumping, and the use of sanitary landfill. It is the consensus of most studies reviewed that the sanitary landfill is the most feasible method of disposal. However, two reports recommend that resource recovery with incineration of garbage in coal fired boilers for power generation should be seriously considered as the primary method of disposal."

For the most part, the conclusions reached in this new study closely followed those presented in April of 1968 in the "Community Facilities Study: Refuse Collection and Disposal". This effort was performed by the Memphis and Shelby County Planning Commission which has been supplanted by the MATCOG. The innovative material in the new study is directed toward energy recovery from solid waste after some waste pretreatment and material separation.

Shelby County/Memphis City Department of Health

In addition to the State Department of Public Health, the local combined health department impacts solid waste disposal practices. It was found that the local codes on sanitary landfill are as strict as the state regulations and can therefore be applied.1/

The Memphis and Shelby County Health Departments merged in 1942 and the two now operate jointly under contract. This department operates under a Board of Health consisting of seven members and is responsible to the Shelby County Commissioner of Health. A Health Director is appointed jointly by the Shelby County Commissioner and the Mayor of Memphis.

The Health Department runs programs for control of communicable diseases, school health programs, and the Memphis Medical Center.

1/ The state act permits this "dual" regulatory power

The Health Department also operates a Division of Pollution Control, the Director of which has jurisdiction over all forms of pollution-abatement: water, air, and solid waste. The director coordinates his activities with Federal, State, and local authorities in an effort to reduce pollution problems wherever they exist. An Air Pollution Hearing Board deals with problems in that area. A Director of Environmental Services provides water sampling, milk processing inspection, food inspection, and general sanitation across the city and county. The chief of the Solid Waste Control Section is responsible for regulating solid waste disposal activity. His major tasks include inspecting landfill sites, checking littering, shutting down obsolete incinerators, surveying industrial solid waste incinerators, and recommending temporary solutions to the solid waste problem while encouraging the implementation of long-term remedies.

The Solid Waste Control Section of the Department of Health was involved in the state activity to enforce the regulations governing the disposal of solid waste onto the land. These efforts resulted in the construction of the two new disposal sites, the termination of the operations of ten others, and the conversion of the disposal activity at the County Penal Farm to a sanitary landfill.

4.4.4: Local Level Agencies

On a local level, there have been a number of agencies which have significantly affected solid waste management activities in Memphis. The union, the American Federation of State, County, and Municipal Employees, has apparently had the greatest impact, as discussed in earlier text concerning the history of the system. Additionally, the private sector consulting firm which performed the districting and routing job for the city has certainly assisted in achievement of system efficiencies. Finally, the Memphis State University, by its efforts to assist both the MATCOG and the City of Memphis in disposal approaches, has affected sanitation operations. These agencies are all external to the city government and, with the exception of the county/city joint Health Department, there are no agencies internal to the city government which actively affect the solid waste management system.

American Federation of State, County, and Municipal Employees

The historical impact of the AFSCME on the solid waste management system in Memphis has been discussed in previous sections of this chapter. The strike was a catastrophic failure of the system due to a breakdown in communications but it did resolve a number of difficulties and resulted in a relatively strong position for the union.

Since the strike in 1968, there has been a city-wide election and the new administration was installed in January, 1972. It was stated by the union spokesman that considerable political efforts were undertaken by its staff to motivate its members and the community at large to elect candidates who would be more responsive to the needs of the city and its employees. From all appearances, these were fruitful efforts. The city now uses trained personnel to negotiate with and respond to the union, whereas these responsibilities were once assumed by management who were relatively unskilled in these areas. Furthermore, some of the key issues that precipitated the 1968 event are now being resolved. The Division of Sanitation Services, through its fostering of the concept of participatory management and communication with the union, is clearly meeting many needs of its employees.

At this time, there are three major areas that are under scrutiny by city management and AFSCME. The union feels that the level of employment in the division has not kept pace with the growth of the city. As a consequence, the union spokesman suggested that either the level of service offered by the division has fallen off or that the division employees are required to work longer hours than before. There is some evidence that both of these allegations have some truth. The union feels that, to maintain the level of service at the standard adopted by the city, there will have to be some modifications of the solid waste system. The installation of the transfer station facilities is likely to meet this need.

It was also stated that there is some inequity in the task incentive system that is currently being employed. The original application of the districting and routing model was said to have resulted in poor work balancing even though the system efficiency increased as a whole. This problem was a significant factor contributing to the second application of the model methodology. At this time, there are still route balancing problems and management has begun to rely on suggestions from the collection crews.

The third major area of interest is directed toward safety on the job. Article 16 of the Memorandum of Understanding between AFSCME Local 1733 and the City of Memphis is entitled "Health, Safety, and Sanitary Conditions" (see Appendix B). In this article, there is a requirement to form a joint committee called the "Health and Safety Committee" ... " to review and make recommendations on health, safety, and sanitary conditions which affect the well being of employees ... ". This joint committee is several years old and, since its organization, there has been a drop in the number of injuries on the job. At this time there is one major job hazard under inspection by the union. Because of the relatively large crew size, the entire complement of men cannot ride in the vehicle. The extra personnel ride on platforms on the rear of the truck as recommended by the union. The city has repaired these platofrms but the union states that this is one hazard to which the workers should not be exposed. The union maintains that workers should be transported to and from their routes either in a double cab arrangement or by separate enclosed vehicles.

The current union-administration relationship is both healthy and improving as a result of innovative departmental management. There are still a nominal number of grievances filed, but the dialogue maintained between the two organizations is almost certain to resolve any problems before they assume serious proportions.

Private Consultant Firm

During the early part of fiscal year 1968-1969, it became evident to city management that the twice-per-week level of service could not be met for 100 percent of the city customers. The available options included either staffing up by about 200 men or performing a route optimization scheme proposed by a consulting firm. It was felt that the choice of the latter option would result in no net cost to the city and could, in fact, result in a considerable savings.

The first execution of the routing methodology resulted in the systems savings projected by the consultants but had a curious characteristic that was not acceptable to management. The output was a route allocation in which a number of crews would be found servicing the same area on intermixed streets. This was confusing even though the total effect was system optimization. Appendix C presents the conclusions of city management on the savings that resulted from the first application of the optimization scheme.

Since the first optimization attempt, there has been one other formal application of the methodology which was modified to keep the routes from overlapping in any given area. This was done by the consultant at a nominal cost to the city and resulted in the basic routing structure used today. There has, however, been some manual modifications of the route structure to adjust for the termination of disposal operations at the original sites and the initiation of the new remote sanitary landfill. The effects of these modifications do not appear to have disrupted the second optimization scheme to any great degree.

Unless the current routes are revised, the installation of the three transfer stations in the city will result in a non-optimal routing structure. It was not determined if the Division of Sanitation Services intends to renegotiate with the consultant firm but, because of the experience of the division head, this may not be necessary. He has closely followed the methodology of the consultant and may be able to perform the necessary rerouting.

Memphis State University

The university, as an institution, has had little impact on the solid waste management system, but members of the engineering school appear to have affected certain policy positions. The city has received technical support from at least one member of the academic staff in a number of areas. As mentioned in the discussion of the MATCOG relationship, a considerable fraction of the regional solid waste analysis is being performed by a staff member of the engineering school.

Additionally, the school also provides technical advice for the resource recovery plans which have been presented to the Environmental Protection Agency and are still under consideration by the TVA. This is a reasonable arrangement because the principal contact was working for the city as an Administrative Engineer from May to September of 1971 when the original plans for the resource recovery system were conceptualized.

This relationship is apparently still strong, since the city is pursuing the original concept without Environmental Protection Agency funding, and the technical advice and evaluation functions are still being performed by the staff member of M. S. U.

5

SOLID WASTE SYSTEM CHARACTERISTICS

The Division of Sanitation Services is responsible for the collection of essentially all of the solid waste generated in the city, including a number of downtown commercial sources which are not collected by private sector firms. The division does not collect abandoned vehicles, construction and demolition wastes, and sewage treatment residues, but it will collect all other discards, including pathological wastes from hospitals. Additionally, the division is responsible for the maintenance of all city-owned motor vehicles except those of the Park Commission and Fire Department. The Bureau of Solid Waste Disposal of the Division of Public Works is separate from the Division of Sanitation Services, and it independently manages and performs most of the required disposal operations. There is also a private sector disposal site that is currently being used by city collectors because of its convenience to certain segments of the city. The county disposal site is utilized by 30 city collection vehicles.

At this time, the division performs nine separate solid waste collection activities in six contiguous areas of the city. Mixed refuse is collected twice per week on a Monday, Tuesday - Thursday, Friday schedule while trash is picked up by the same crews and equipment on Wednesday. Additionally, there are separate fleets which collect commercial accounts, bulky items, shredded leaves, road litter (mechanical and hand sweeping as two separate activities), alley cleaning, and road dirt (panning). Weed cutting is performed principally by the leaf collection crews. To perform these activities, the city currently employs about 1,420 men and actively utilizes nearly 400 pieces of equipment.

The Bureau of Solid Waste Disposal of the Division of Public Works now operates one sanitary landfill which is relatively remote to most of the city. In the recent past, the city operated a number of different sites, but operations were terminated because of factors affecting the environmental soundness of these activities which could not be alleviated at a reasonable cost. The private sector disposal operation is more convenient to a number of city routes, and it is used to avoid the very long distances from these routes to the city landfill. It has been reported that the disposal methodology practiced by this company is quite effective and very satisfactory.

5.1: Collection Responsibilities of the Division of Sanitation

The division is both directly and indirectly responsible for the collection of essentially all of the solid waste generated in the City of Memphis. The private sector can collect wastes from specific customer types, but it is carefully regulated by a system of permits and fees. Additionally, the private sector has been utilized for the collection of newly annexed city areas where it was deemed not economically feasible for the city to provide service. Appendix D presents the most recent revision of the city ordinance which defines and regulates solid waste management activities. It is not completely up-to-date due to the rapid transition which has taken place in system management. Furthermore, the definitions of "garbage" and "rubbish" do not adequately reflect the true collection patterns.

5.1.1: Mixed Refuse Collection

Duties and Level of Service

Mixed refuse is scheduled to be collected twice per week on either a Monday-Thursday or Tuesday-Friday schedule. As is being more frequently found in many city-serviced metropolitan areas, Wednesday is set aside for trash collection by the same crews that pick up mixed refuse during the balance of the week.

The collection of mixed refuse is generally carry-out, but the crews will also pick up specific materials at the curbside if they are stored and placed properly. Storage containers are specified to have a minimum and maximum volume of twenty and thirty gallons respectively, and fifty-five-gallon drums are specifically prohibited by the ordinance. The composition of the materials placed in the containers for collection will include prompt wastes such as putrescibles (garbage), newspapers and containers, and obsolete wastes such as shoes and other semi-durable items. There is no limit on the number of containers that will be collected.

The term "carry-out" is not an accurate description of the duties of the collector. Each man is provided with a specially designed dolly and a number of containers. At the storage point, the collector transfers the waste from the storage containers to the transfer containers which are then rolled out on the dolly. The contents of these containers are then loaded into the compactor and the collector proceeds to the next pick-up point. This arrangement was designed to ease the burden on the men, as the service is unlimited carry-out, but may contribute to lower manpower and crew productivities.

The mixed refuse crews will also collect certain discards if placed at the curbside. These wastes include such materials as tree trimmings, bundled magazines and newspapers, grass, and other similar residential refuse. In all cases, these wastes must be suitably contained and localized so that crews are not interrupted in their normal collection activities.

Although the level of service is defined to be twice-per-week, it was reported that there are catch-up problems. Prior to the installation of the districting and routing model, the frequency of service was twice-per-week for 72 percent of the customers in the city. Now, however, it was estimated by management that about 98 percent of all city customers receive the twice-per week mixed refuse service, a condition that leaves some room for improvement.

Manpower and Equipment Allocation

For the major part of the 1972 calendar year, there were 209 identifiable mixed refuse collection routes in Memphis. Table 3 presents data on the manpower and equipment that was assigned to this activity. The table does not provide sufficient detail to indicate that within the route structure there is a significantly varying manpower assignment pattern. This detail is

TABLE 3

MANPOWER AND EQUIPMENT ALLOCATIONS

Function / Personnel	Mixed Refuse	Trash 1/	Night Commercial		Bulky Items	Shredded Leaves	Mech. Sweeping	Hand Sweeping	Alley Cleaning	Panning Operations	Admin.	Total
			A	B								
Laborers	708	694	12	24	88	48	-	16	33	19	-	948
Drivers, Regular	209	223	6	8	44	24	11	-	8	4	-	314
Drivers, Support Trucks or Equipment	48	48	-	-	18 3/	-	15	-	-	-	-	81
Supervisors	-	-	-	-	-	-	-	-	-	-	35	35
Clerical/Secretarial	-	-	-	-	-	-	-	-	-	-	8	8
Dispatchers	-	-	-	-	-	-	-	-	-	-	10	10
Management	-	-	-	-	-	-	-	-	-	-	5	5
Watchmen and yardmen	-	-	-	-	-	-	-	-	-	-	22	22
Totals	965	965	18	32	150	72	26	16	41	23	80	1423
Equipment 4/												
Packers	209	223	6	8	-	-	-	-	-	-	-	223
Satellite Vehicles	48	48	-	-	-	-	-	-	-	-	-	48
Open Bed	-	-	-	-	59	-	-	-	8	4	-	71
Rotoboom	-	-	-	-	3	-	-	-	-	-	-	3
Leaf Truck	-	-	-	-	-	24	-	-	-	-	-	24
Mechanical Sweepers	-	-	-	-	-	-	11	-	-	-	-	11
Self-loading Truck	-	-	-	-	-	-	5	-	-	-	-	5
Flushers	-	-	-	-	-	-	10	-	-	-	-	10
Totals	257	271	6	8	62	24	26	-	8	4	-	395 5/

TABLE 3 (Continued)

MANPOWER AND EQUIPMENT ALLOCATION

1/ Trash collection is performed Wednesday using the mixed refuse and night commercial trucks. The extra fourteen trucks are driven by laborers that have licenses.

2/ The "total" column is based on all activities except Trash collection which is performed by Mixed Refuse Crews.

3/ Of these eighteen, three are Rotoboom drivers, each of which requires five Open Bed drivers.

4/ All equipment listed does not include spares and equipment on order. The number of packers for calendar year 1972 is not accurate and is explained in the text.

5/ This total does not include any reserve vehicles.

presented in Table 4 for clarification. Including the satellite vehicle drivers, the average number of men assigned to a packer truck is 4.62. It was stated that manpower assignments are made to balance the work load on all routes: This policy is coincident with the application of the districting and routing models. The average length of a route is calculated to be 7.2 miles, and the average distance of the storage sites to the roadway was reported to be 110 feet.

In 1972, the regular collection fleet was predominantly twenty-yard Heil packer bodies mounted on International Harvester chassis. For the major fraction of the year, the city had only 204 operational packers, and the remaining vehicle requirements were met with open-bed trucks. In September, eighteen additional packers were received (6 Heil, 6 Leach, 6 Gar-Wood, all IH chassis) and five of the older vehicles were retired. In the remaining months of the year, forty-seven more Leach packers on IH chassis were added to the fleet. Consequently, if no more vehicles have been retired, the city now owns 264 operational twenty-yard packers. This circumstance is quite fortunate, as city growth by annexation has forced the division to add 23 new routes since the date of the site visit. The satellite fleet consists principally of Scouts which operate on the "mother-truck" principle.

Efficiency and Productivity

Table 5 presents the operating characteristics of the Division of Sanitation Services during FY 1971-1972. Of immediate interest is the fairly high average mixed refuse generation rate of 98 pounds/dwelling unit/week, a condition that requires the twice-per-week collection provided by the city. Furthermore, because the level of service also includes carry-out, it is clear that the system is highly labor-intensive as is reflected in the average of 4.62 men per crew.

TABLE 4
DETAILED STRUCTURE OF MIXED REFUSE MANPOWER ALLOCATION

No. Routes	No. Drivers/route	No. Crewmen/route	No. Satellite drivers/route	Total Men
3	1	0	2	9
6	1	2	0	18
62	1	3	0	248
42	1	3	1	210
96	1	4	0	480
				965

TABLE 5

EFFICIENCY AND PRODUCTIVITY DATA FOR MEMPHIS

	Parameter \ Collection Function	Mixed Refuse	Trash	Bulky Items	Shredded Leaves	Mechanical Sweeping	Hand Sweeping	Alley Cleaning	Panning Crews	Night Commercial
Community Description	Population Served	581,807 1/								
	No. of Resid. or Comm. Units	184,733								9386
	Street Miles	3000								
	Alley Miles	250								
	Area (sq. mi.)	217								
	Pop. density (peo/sq.mi.)	2873 2/								
Waste Amounts	Annual Amounts Collected 3/	471,248 4/ tons	108,864 tons	404,595 yd	230,000 yd	13,665 curb mi.	13,050 curb mi.	770 alley mi.	1263 curb mi.	36,076 4/ tons
	Lbs./unit/wk	98	22.7	See note 5/	See note 5/	NA	NA	NA	NA	140.6 6/
	Lbs./person/day	4.44	1.03	See note 5/	See note 5/	NA	NA	NA	NA	NA
Collection System Description (inc. Level of Service)	Point of Collection	backyard	curb			roadway	sidewalk & roadway	alley	gutter	alley or curb
	Freq. of Collection	2/week	1/week	request	seasonal	See note 7/	1/day	3/year	NA	See note 8/
	Type of Storage Container	20 → 30 gal.	NONE SPECIFIED							20 → 30 gal.
	Ave. Dist. to Disp. Site	20 MILES								
	Avg. Miles Driven/truck/day 9/	77	89	NA	NA	NA	NA	NA	NA	75 → 95
	Avg. Hours worked/day	Eight								
	Direct men	965	965	150	72	26	16	41	19	50
	Crews 10/	209	223	59	24	11	16	8	4	14
	Crew Size 11/	4.62	4.33	2.54	3	2.36	1	5.13	4.75	3.57
	Trucks 12/	257	271	62	24	26	-	8	4	14
Wages	Ave. wages and fringe for laborers		$2.56 Direct $ .22 Fringe	$2.78		The cost of fringe benefits does not include vacations, holidays, sick leave, and bonus days				
	Ave. wages and fringe for drivers		$3.01 Direct $ .26 Fringe	$3.27						
Collection Cost/Efficiency Figs.	Stops/Crew/Day 13/	441	NA	NA	NA	NA	NA	NA	NA	567 14/
	Tons/Crew/Day 13/	10.84	9.39	26.4 yds	48 yds. 14/	NA	NA	NA	NA	9.91
	Coll. Cost/resid. unit/yr.	$28.40	$7.10	$5.52	$2.65	$.96	$.59	$1.51	$.85	$1.84
	Coll. Cost/person/yr.	$ 9.02	$2.25	$1.75	$ .84	$.30	$.19	$ .48	$.27	$ .58
	Coll. Cost/ton/yr.	$11.13	$12.05	$2.52/yd	$2.13/yd	NA	NA	NA	NA	$9.42
	Total Coll. Cost/yr. 5/	$5,246,066 16/	$1,311,516 16/	$1,019,347	$489,279	$176,689	$108,707	$278,598	$156,295	$339,782
Disposal	Type & No. of Disp. Sites	Sanitary Landfill - One								
	Total Disp. Cost/yr.	$563,327								
Total Cost	Total Cost/yr.	$9,689,606								
Misc. Cost Ratios	Coll. Expense as % of tot. Exp. 17/	94.2								
	Coll. labor expense as % of tot. Coll.	88.9								
	Coll. equip. expense as % of tot. Coll.	11.1								
	Proc. & Disp. expense as % of tot. exp.	5.8								
	Proc. & Disp. labor expense as % of tot. disp.	64.8								

TABLE 5 (Continued)

ASSUMPTIONS AND COMMENTS

1/ Based on the number of dwelling units reported to be served by the Division of Sanitation Services and occupancy and population data from the 1970 Census of Housing (page 90) and Census of Population (page 64) for the State of Tennessee.

2/ Based on total population of the city in 1970 (623,530).

3/ Appropriate units are used. Compacted mixed refuse is assumed to have a density of 500 pounds/cubic yard whereas compacted trash is assumed to have a density of 400 pounds per cubic yard. Bulky items and shredded leaves cannot be assigned accurate densities.

4/ Mixed refuse from residential dwelling units and commercial accounts was 2,029,300 cubic yards in 1972. Collection from both sources was allocated according to the daily number of crews and average daily collection for each waste source and was, for example, calculated as follows:

$$\frac{14 \text{ crews} \times 40 \text{ yards/crew}}{14 \text{ crews} \times 40 \text{ yards/crew} + 209 \text{ crews} \times 35 \text{ yards/crew}} \times$$

$$\frac{2,029,300 \text{ yards}}{\text{year}} \times \frac{.25 \text{ tons}}{\text{yard}} = 36,076 \text{ Tons/year for commercial collection}$$

5/ These collections are reported in cubic yards and cannot be accurately converted to units of mass. When left in volumetric units, these entries are too small to be reported.

6/ This entry reports the average weekly collection for a single commercial unit.

7/ Mechanical sweeping schedule: Downtown streets are swept daily by three crews; major thoroughfares are swept weekly by four crews; all major collector streets are swept monthly by four crews; residential areas are swept annually by eleven crews. Note: There are a total of eleven crews that perform all of these activities.

8/ Six crews collect some commercial accounts five times each week and eight crews collect the remaining commercial accounts twice per week.

9/ Daily mileage is calculated from the number of trips per day to the disposal site, the distance to the site, the route length and an estimate of the distance from the truck lots to the routes.

TABLE 5 (Continued)

10/ A crew is defined as the men who work from one collection truck and includes all other men that drive or work from any equipment which supports that truck.

11/ The crew size is defined as ratio of the total manpower assignment to the total number of collection trucks utilized. For this calculation, the total number of trucks will not include supportive equipment.

12/ The number of trucks will include any supportive equipment used for collection. Supportive equipment can be calculated by subtracting the number of crews from any entry on this line. For details, see Table 3 and 4.

13/ Assuming a 260 day work-year for all collection functions except leaf collection, mixed refuse collection, and trash collection. Leaf collection is seasonal, mixed refuse is assumed to be collected 208 days per year and trash is assumed to be collected 52 days per year.

14/ Data supplied by division management and was not calculated.

15/ The allocation of the costs associated with each function was determined by taking the product of the total collection costs for FY 1971-1972 with the fraction of the total manpower for each function. Administrative expenses were distributed proportionally among the functions. For example, the collection costs for bulky items were calculated as follows:

$$\left[\left[\left[\frac{150 \text{ men}}{1423 - 80 \text{ men}} \times 80 \text{ men}\right] + 150 \text{ men}\right] \Big/ \left[1423 \text{ men}\right]\right] \times \$9,126,281 \doteq$$

$$\$1,019,347$$

16/ The mixed refuse crews collect trash one of every five workdays. The total costs of these men were distributed as 4:1 is to mixed refuse: trash.

17/ These values are deceptive as the disposal operations were in a rapid state of transition and were not performed properly. Current operation is sanitary landfill at much higher cost than reported here.

The crew and truck productivities of 10.84 tons/crew/day and 441 stops/truck/day are slightly lower than cities with comparable systems. The collection cost of $11.13 per ton compares well with other southern cities and indicates that the system is relatively efficient, given the constraints imposed by the high level of service.

For mixed refuse removal, the costs are $28.40 per dwelling unit per year or $2.37/dwelling unit/month and lies close to the current monthly billing rate of $2.50 per month. However, the costs of other collection activities add considerably to the basic costs of mixed refuse collection and, consequently, the current fee system does not now reflect the level of service provided by the division as a whole.

5.1.2: Trash Collection

Duties and Level of Service

On Wednesdays, the crews which normally perform mixed refuse collection are assigned to traverse both of their routes to collect trash. In this context, the composition of trash will include all non-putrescible discards that can be placed in the hopper of a packer truck which are not too hazardous or too heavy to load. For example, trash would include brush, bagged yard trimmings, small appliances, children's broken toys, etc., but would not include garbage, large appliances, demolition masonry wastes, and the like.

For collection, trash must be properly contained or bundled, and be placed at the curb. Section 19-10 of the ordinance (see Appendix D) specifies the necessary preparation and procedures required of the trash generator to ensure collection. If the crews should decide that the type or condition of the wastes placed for removal do not meet with city specifications, they have the option to refuse to collect. However, crews will generally collect what they can to avoid the necessity to return as the result of a complaint.

Manpower and Equipment Allocation

Table 3 presents the manpower and equipment used for trash collection. For the most part, the crews which provide normal mixed refuse collection are assigned to collect trash. However, an additional 14 trucks are used to support these activities to ensure that all discards are collected. These trucks are the vehicles which are used on the evening commercial routes and are driven by mixed refuse crewmen who have chauffeur's licenses. This allocation can be observed by comparing the laborer assignments for mixed refuse and trash collection.

Efficiency and Productivity

Table 5 indicates that the trash generation rate in the city is very high. It is suspected that the greatest fraction of trash is comprised of vegetal matter which, because of its quantity, was said to be quite a problem in the city.

Because of the high trash generation rate, the average daily trash collection volume approaches that found for mixed refuse collection. Thus, trash collection differs only from mixed refuse collection in that the waste must be placed on the curbside and that the crews must cover their two-day route in one day.

If mixed refuse and trash are assumed to constitute the normal waste of a residence, then the annual waste collection costs in Memphis are $35.50/dwelling unit/year. This is $2.96 per dwelling unit per month and is $.46 more than the visible $2.50 service charge.

5.1.3: Bulky Item Collection

Duties and Level of Service

The Division of Sanitation Services is responsible for the collection of bulky items that are discarded by essentially all of the generators of these wastes in the city. There is no formal route structure for this activity, and there are three mechanisms that initiate collection. First, any resident can inform the division that a bulky item collection is desired. The division will then arrange for a pickup at the mutual convenience of the crews and the customer. In theory, only one collection per year is offered to each resident, but in practice, this service is available for a reasonable number of collections.

Bulky item collection is also initiated by the activities of the "City Beautiful" component of the division. This organization identifies areas that require bulky item collection, informs the residents of these areas to place their discards at the curb, and sends crews to perform the collection. Approximately one area per week is serviced by this mechanism.

The Department of Health, with federal funding, has embarked on a rat control plan which includes the clearing of bulky discards from blight areas. Under these circumstances, the Health Department will force the residents to clean up and the division has the responsibility to collect whatever debris is placed at the curb.

Manpower and Equipment Allocation

Table 3 presents the manpower and equipment assigned for the collection of bulky items and related discards. At this time, there are 59 open bed trucks and three Rotoboom cranes being used for bulky item collection. Normally, five trucks with a driver only are assigned to each of the three Rotobooms and, consequently, the crew size presented in Table 5 does not accurately reflect the true distribution of the work force. All of the unskilled labor force is allocated to the 44 vehicles which do not support the crane operations, and, therefore, the model crew size is really three men per truck.

Efficiency and Productivity

Bulky item collection is not amenable to description in terms of crew efficiency and productivity. However, Table 5 indicates that crew productivity is quite high at 26.4 yards per crew per day. In comparison to other cities of similar size, this is quite large and is fundamentally a result of the bulky item generation rate. As a result of this factor, this collection activity is quite expensive and costs $5.52 per dwelling unit per year.

5.1.4: Shredded Leaf Collection

Duties and Level of Service

Shredded leaves are collected by twenty-four crews that completely cover the city three times per year. Leaves must be piled either at or near the curb to ensure that the equipment can collect without forcing the crews to move the waste by hand. Since leaf accumulation is seasonal, leaf collection crews are expected to perform other activities, such as weed removal, during low periods of activity.

Manpower and Equipment Allocation

The twenty-four crews man a like number of portable leaf collection machines and, as Table 5 indicates, there are three men per vehicle. The reserve fleet consists of six converted "Vac-All's" which are manned by the crews of disabled leaf collection machines if necessary.

Efficiency and Productivity

The City of Memphis is heavily wooded for a metropolitan area and, consequently, annual leaf collections are quite high. The collection of shredded leaves is a fairly costly operation to the division, even though the crews are relatively-efficient. Table 5 indicates that even though crew efficiency is 48 yards per day, the cost is quite high at $2.13 per yard. Consequently, the annual cost to the residents is $2.65 per dwelling unit.

Because of the nature of the leaf collection activity, it is unlikely that efficiencies can be raised and that costs can be reduced without some major change in level of service, manpower allocation, or equipment innovation. Since such modifications are difficult to implement, the leaf collection activity will probably remain a fixed burden to the city for quite some time.

5.1.5: Night Commercial Collection

Duties and Level of Service

The solid waste ordinance for Memphis makes it quite clear that all collection activities are the responsibility of the city. This does not mean that private sector collectors are prohibited from collecting from commercial, institutional, and large building customers, but they must obtain a permit to do so and, in addition, secure location permits for every customer they collect. The ordinance presented in Appendix D describes the nature of the regulatory system currently in effect.

The Division of Sanitation Services collects from those commercial customers who are not collected by authorized private sector firms. There are currently 9,866 separate stops and all are billed for the service. Table 6 presents the distribution of the billable customers.

It was estimated that approximately 6,000 of the commercial pickup points served by the city receive five collections per week, and the remainder are collected twice per week. Additionally, there are 10 points that receive seven collections per week because of the pathological nature of their wastes. The high frequency of service is predominantly delivered to the central business district and the lower frequency of service is received by commercial customers in outlying areas.

With no exceptions, all storage containers are thirty gallons maximum. For the most part, this is quite reasonable as the greatest fraction of commercial customers generate less than 180 gallons/week and are collected nightly. However, the larger customers are likely to be troublesome to collect because of the high number of containers that are required. Apparently many of the commerical high volume customers have chosen city collection in lieu of the private sector, which is certain to use hoist-type containers for copius wastes. It is possible that city collection charges are less expensive and that these customers have the area required for can storage.

Manpower and Equipment Allocation

Commercial customers are collected by two separate types of crews as illustrated in the data of Table 3. Six crews are manned with three men per truck and are assigned to downtown collection. The remaining eight crews have four men per truck and collect the outlying areas. The equipment that is used by these crews is the same that is used by the regular mixed refuse and trash collectors. In view of the complete absence of containerization for city customers, there is no need for specialized trucks for these points.

Efficiency and Productivity

Table 5 demonstrates that the night commercial collection is no more efficient than the day crews in terms of tonnage. This is not

TABLE 6

COMMERCIAL ACCOUNT DISTRIBUTION AND FEE SCHEDULE

Group No.	No. of Accounts	Collection Quantities	Fee Schedule
1	7818	0 — 180 gallons/week	$ 6.00/month
2	1391	181 — 360 gallons/week	12.00/month
3	108	361 — 780 gallons/week	25.00/month
4	41	781 — 1200 gallons/week	34.00/month
5	19	1201 — 1800 gallons/week	48.00/month
6	10	1801 — 3600 gallons/week	79.00/month
7	0	3601 — 5400 gallons/week	127.00/month

surprising in view of the fact that the waste generation rate of the mode of the commercial customers is low: group 1 customers range from 0 to 180 gallons per week which, is about one can per collection if collected at 5 times per week. Furthermore, the complete lack of containerization contributes to the low mass collection efficiencies.

The crew collection frequency which appears in Table 5 was provided by management. This does not accurately reflect the real situation: The 6 downtown crews collect about 6,000 stops every night, resulting in a collection frequency of 1,000 stops/crew/night; the remaining 8 crews collect 1,933 stops every night, resulting in a lower collection efficiency of only 242 stops per crew per night. The weighted mean results in a crew collection frequency of about 567 stops per crew per night.

5.2: Quality of Service

The quality of the collection services offered to the residents of Memphis appears to be reasonable given the level of service and local geographical, climatical and environmental characteristics. In January of 1973, the complaints for missed collections were averaging .139 percent of the total number of stops serviced. However, the total number of complaints during this month were 4,406 as compared to 2,697 during January of 1972. This could be a result of the very wet weather encountered this year, so a substantive drop in quality of service cannot be assumed.

It was stated by the division head that there still are "catch-up" problems. For example, if a crew fails to complete a route, it must continue that route on the next day. Consequently, the workweek can end before all routes are completed with the unserviced customers receiving only one collection during the week. This problem was quite severe prior to the initiation of the districting and routing model and still has not been completely solved.

There are a number of factors which have been reported that affect the quality of service in the city. The most significant of these is the unseasonably bad weather that was characteristic of the winter of 1972-1973. The large quantities of rainfall had a number of very difficult effects. First, the disposal sites could not be used for a number of consecutive day intervals and, consequently, collections were hampered during these periods. Second, standing water often made it difficult for the men to perform their tasks when they could collect. As a consequence of these factors, the quality and the level of service has not been what the city is obliged to provide.

A second factor which will be discussed in more detail in the section describing the inner city, is an apparent double standard. The wealthier sections of the city were said to receive better service than their less affluent neighbors. The quality of service rendered to higher income areas needs no explanation but the apparent lower quality of service in other areas can be partially explained. In lower income areas, collection responsibilities are split between the public and private sectors with the latter collecting from public housing and some commercial accounts. Because of this split and an apparent apathy in private collector crews, the responsibility of the poorer appearance and lower quality of service in inner city areas cannot be ascribed to either sector. Consequently, both sectors appear to feel the problem is the other's responsibility. There are additional factors which will be presented later in this chapter.

The system currently being used to handle complaints does not provide for very rapid response. Each garbage-related complaint must be answered within twenty-four hours, but this does not mean that service will be immediately rendered. The customer will be advised on when to expect a pick-up. On this basis, the actual response time cannot be exactly determined but it is likely to often be in excess of a day. For trash collection, any complaint must be answered in a similar manner, but the time delay may be at least a week.

Because of the putrescible nature of garbage, and the relatively warm climate in Memphis, the catch-up problem and the slow response time are likely to create nuisances. In addition to the possibility of odors under these circumstances, a missed collection may also overload whatever storage containers are used by the customer.

5.3: Labor Management Relations

The sequence of events which characterized the strike in 1968 serves as the foundation of the current working relationship between the city and its lower echelon employees. Setting aside all of the substantive issues involved in the strike, the principal result was the establishment of the necessary lines of communication between the administration and the labor union. An open dialog between the principals is necessary to ensure that the catastrophic events of 1968 have a low probability of reoccurrence.

Since 1968, the American Federation of State, County, and Municipal Employees has been the bargaining agent for approximately 30 percent of the city employees, including the sanitation workers. The specific benefits gained since then are presented in Appendix B which is the current memorandum of agreement. Most of the benefits presented in the agreement will be found in other unionized systems. During 1966, workers within certain job classifications were offered the option of remaining under the pension plan or withdrawing their funds and be covered by Social Security. This option was offered at the request of the union. The vast majority of the employees elected to be covered by Social Security.

The agreement is not benefit-oriented; rather, it addresses more long-term issues such as health and safety on the job, training programs, and grievance procedures. This emphasis is not surprising in view of the brief history of union influence and the events which led to its recognition. As a stronger and more definitive relationship matures between the union and the city, it is likely that more fundamental bread-and-butter issues will be negotiated.

The tenure data supplied by division management indicates that the labor force is quite stable. Of the 992 unskilled laborer positions, only 119 men hold tenure of a year or less. If this is taken as an indication of turnover, then the turnover rate is only 12 percent which is exceptionally low. The driver positions are even more stable with no employees having less than two years tenure. It must be kept in mind, however, that drivers are recruited from the unskilled labor category, a factor which contributes to the tenure structure of the driver positions.

Absenteeism is not as much of a problem in Memphis as it is in comparable solid waste management systems. In January of 1972, an average of five to six percent of the sanitation employees were absent without permission but in January of 1973, this had dropped to three percent or less. The reason for this drop can probably be attributed to a novel policy instituted early in 1972. Employees receive one bonus day (leave with pay) for every four months of unblemished attendance.

The task incentive system that is employed in the Division of Sanitation Services differs somewhat from systems operated in other cities. In Memphis, the crews from a zone can quit early providing that all of the routes in the zone are completed. Consequently, there is an incentive for crews to help complete the route of a lagging truck. In view of the reported catch-up problem, it is probable that this policy is not universally successful for all of the crews in the city. In fact, the reported average completion time of the routes is eight hours so it would appear that the task system is either not functioning as an incentive or the routes have been adjusted to equal a workday.

Before fifty-five gallon drums were prohibited by the division, there were a large number of back injuries occurring among collectors. Upon the termination of their use, the injury rate dropped significantly, but minor injuries have increased. A review of the recent accident record indicates that the current accident types are characterized by lacerations and other wounds, dog bites, mashed digits, and muscle strains. Fractures and other injuries of a more serious nature do not appear to occur with any great frequency. Nevertheless, both the city and the union regard the job hazards of a sanitation worker as a significant problem and representatives from both sectors sit on the Health and Safety Committee.

5.4: Inner City

The "Inner City" of Memphis is composed of three separate and distinct areas: downtown, north Memphis, and public housing projects. The city is responsible for the collection of most of the residential dwelling units in the first two areas but splits the public housing projects with the private sector on the basis of the number of units per building.

Consequently, the degree of containerism is much higher in public housing areas, but the use of individual solid waste cans is also found.

It was reported that the quality of service (including a lower level of service) in the inner city areas is lower than in more affluent neighborhoods. It is almost certain that this situation is a fact because of a number of real conditions that exist in the city. First, the solid waste generation rate by inner city residents is quite high and is likely to be highly dominated by bulky items. Furthermore, many of those residents are not accustomed to municipal sanitation systems and may therefore use unacceptable waste preparation and storage practices. Since the level of service performed is left to the discretion of the crews, a collection may not be made if the waste properties or confinement methods do not meet with city ordinance requirements.

In addition to the considerable quantities of poorly contained or oversize solid wastes, several physical aspects of the inner city areas make collection a difficult proposition. In many areas, the "roads" are narrow and unimproved, making them very difficult to negotiate with a packer truck. Furthermore, if any automobiles are parked illegally on these roads, a truck cannot pass at all. Under these circumstances, a crew cannot collect and maintain their route schedule.

Other physical problems are the lack of adequate drainage along roads, and road improvement policies which place residential dwelling units high on embankments or deep in ravines. Figure 8 illustrates this situation as an example. Under these conditions, collection is a difficult task and can, at times, represent considerable hazard to the crews.

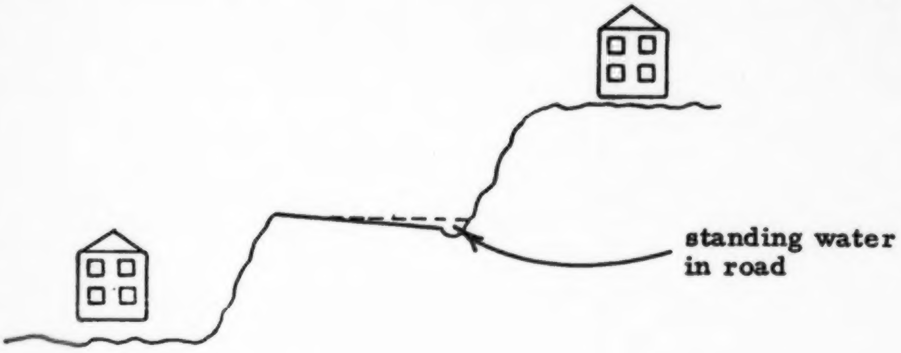


FIGURE 8: PHYSICAL CONDITIONS MAKING COLLECTION DIFFICULT

Finally, the split of collection responsibilities between the public and private sector for housing projects appears to have resulted in a lower quality of service for residents in these areas. Although this finding cannot be easily supported by any hard data, it would appear that this situation arises because of difficulties in specifying the responsibility for the less than careful collection service.

Consequently, the picture of inner city areas includes infrequent collections, the presence of bulky items and vagrant waste adjacent to inner city dwellings and a fair amount of litter in the streets. For the most part, the Division of Sanitation Services has been sincere in its attempts to alleviate these conditions, but the problems require solutions that do not lie within the powers of division management. It would appear that the only viable alternative would be the establishment of a specific solid waste management policy and operation to service these areas. There are some indications that specific problems are now being addressed through the growth of the bulky item collection and the purchase of small packer trucks for narrow road collection. However, to be completely successful, it is likely that some program be initiated to teach sound solid waste practices to the residents of inner city areas.

5.5: Disposal Methods - Present and Planned

The city of Memphis presently operates one landfill and one Class IV Solid Waste (Pathological) Incinerator. In addition, a private landfill is operated by Patterson Waste Control, Inc. and another landfill is operated by Shelby County at its Penal Farm. Figure 9 shows the location of the landfill sites with respect to the City of Memphis.

The principal landfill serving the city is located in Shelby County, outside the Memphis city limits, but close to the extreme southeast portion of the city. It is bounded by Shelby Drive, Malone Rd., Pleasant Hill Rd., and Holmes Rd. The landfill is operated around the clock on weekdays and is closed on Saturdays at 10 P. M. It is reopened on Sundays between 2 P. M. and 10 P. M. and then opened for the week on Monday morning at 6 A. M. There are no scales on the site and the solid waste loading is measured by estimating the volume capacity of incoming trucks. Solid waste deposited in the landfill currently ranges from 8,000 to 9,000 cubic yards per day on weekdays, with Mondays and Fridays exhibiting lower loading figures than Tuesdays, Wednesdays, and Thursdays. Saturdays and Sundays average 2500 cubic yards and 500 cubic yards respectively. A total of 200,000 cubic yards are accepted each month. Most of this comes in compactor trucks with an average density of 500 lb./cu. yd. The monthly loading for the landfill would therefore be 50,000 tons. Daily loading would average 2250 tons on weekdays, or 1666 tons/day averaged out over the entire month.

The entire landfill site consists of 92 acres and is located just outside the Memphis city limits. The choice of this site was made possible because the city is exempt from zoning requirements within a 3 mile jurisdiction beyond its boundaries. The site has been leased from a private property owner for a period of five years, beginning July 1, 1972. Approval of this contract was required and obtained from the Memphis and Shelby County Board of Adjustment. The site was leased initially for $1000/year, but this has now been revised to $1500/year. Of the 92 acres on the site, Memphis has obtained approval from the State of Tennessee for operation of 25 acres of this land

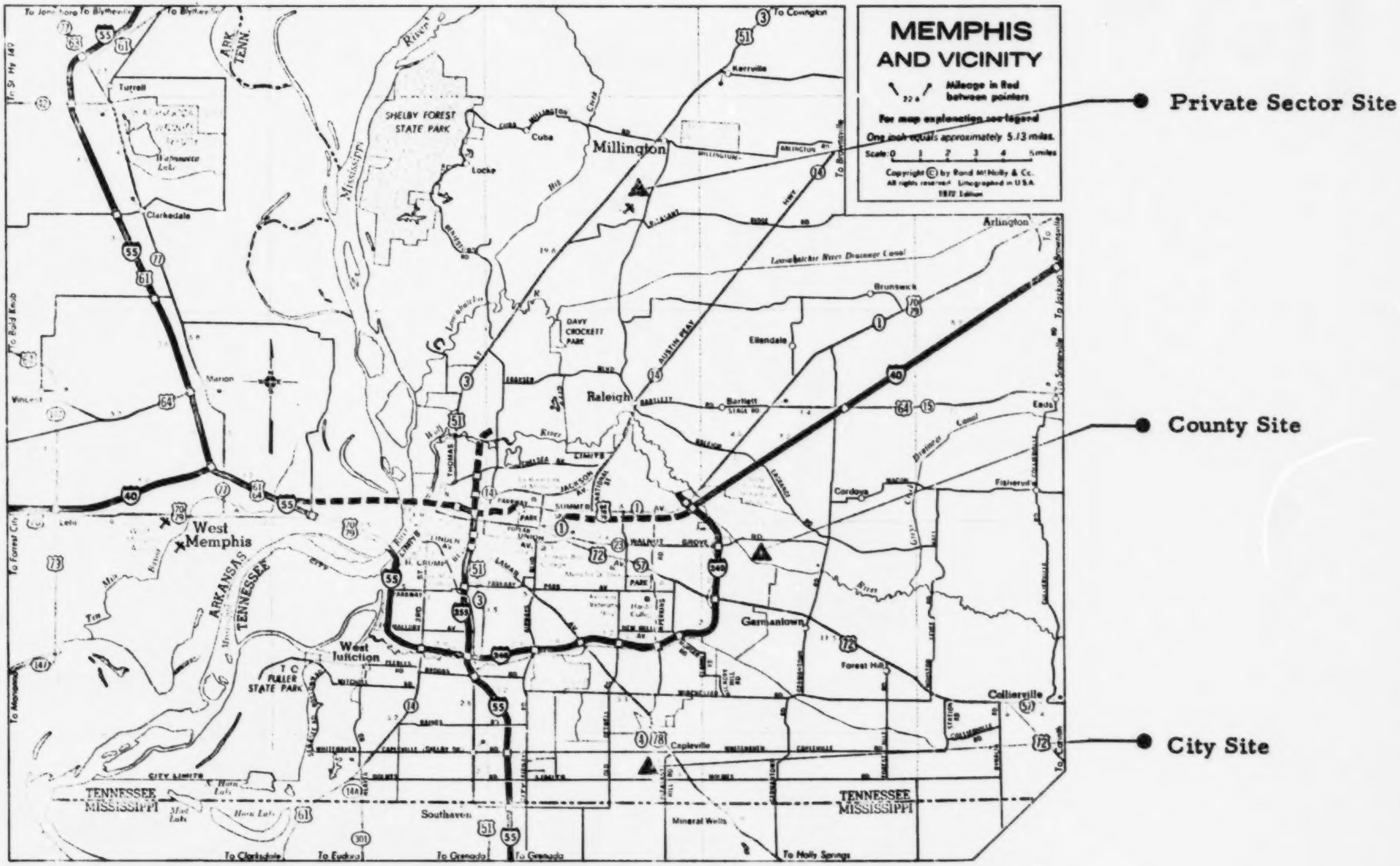

MEMPHIS
AND VICINITY
Mileage in Red between pointers
For map explanation see legend
One inch equals approximately 5.13 miles.
Scale 0 1 2 3 4 5 miles
Copyright © by Rand McNally & Co.
All rights reserved Lithographed in U.S.A.
1972 Edition
Private Sector Site
County Site
City Site
Millington
Raleigh
Germantown
Collierville
West Memphis
West Junction
Southaven
SHELBY FOREST STATE PARK
T.O. FULLER STATE PARK
ARKANSAS
TENNESSEE
MISSISSIPPI

FIGURE 9: LANDFILL LOCATIONS AROUND MEMPHIS

as a sanitary landfill. This involved submission of a complete set of construction, design, and operating reports. The initial 25 acres are expected to last until the end of 1973, and the entire 92 acres for a total period of five years from the effective date of the contract.

There are 41 men currently employed at the site. These consist of one manager, one general foreman, one mechanic, two greasers, two truck drivers, eight security men, nine crewmen, and seventeen heavy equipment operators.

As Table 7 indicates, there are twenty pieces of equipment used at this site.

TABLE 7

DISPOSAL SITE EQUIPMENT

4	track type bulldozers 2 International Harvester TD 25 1 Caterpillar D 7 1 Euclid Tarex 8240
2	loaders 1 track type Caterpillar 955 1 rubber tired Tarex 824I
6	scrapers 4 rubber tired Tarex TS14 2 pull type trailers
1	grader (Gallian)
1	dragline (1-1/2 yd. Link Belt)
1	water truck (for dust control; with a gravity spray bar; 100 gallon capacity;
1	fly spray truck
4	dump trucks 2 Diamond trucks 2 White trucks

In addition to this equipment, the city is experimenting with two large Hyster compactors, each equipped with two sheeps foot endler drums, each separately powered. The city has found that although the compactor efficiency is high, the percent downtime of these machines is correspondingly high. A

$1.2 million vehicle replacement program is now scheduled for the next fiscal year.

The city landfill employs a combination of area fill and slope methods. This is due to the fact that there are deep holes already on the property and the topography of the terrain follows the road elevations and averages a 20:1 slope. The slope is considered beneficial for drainage purposes and an earthen berm with a 4:1 slope has been constructed at the lower end of the slope to catch surface runoff. Six inches of compacted cover material is applied daily at the end operation. At the end of a week's operation, when approximately one half acre has been filled, two feet of final cover material is applied. The depth of fill varies, but has been found to reach 70 feet.

There has been no significant vector problem to date, although starlings do tend to congregate occasionally on the site. Accidental fires are a problem, and events of this sort occur about once a month, usually due to illegal dumping of volatile liquid or paper being ignited by sparks. For the most part these have always been easily controlled and localized with the use of chemical fire extinguishers, with the exception of one occasion when the fire spread through the entire fill area. It was quickly extinguished.

There are two entrances to the landfill site with a guard at each gate. Because of a school located across an intersection from the landfill, there is some restriction on refuse truck traffic patterns around the fill. To date, the landfill is serviced by 1/2 mile of interior road of 8" asphalt, 24 feet wide. Temporary roads of crushed stone and gravel are also used for distances as much as 500 feet off the asphalt road. The truck turn-around time within the site is estimated at seven to eight minutes.

The cost of operating the landfill is estimated at $.38 per cubic yard, or $1.52 per ton. This landfill services both the City of Memphis and private commercial haulers.

The private sector landfill located to the north of the city, in Shelby County on Sykes Rd., is used by some of the city trucks which collect from nearby residential routes. This landfill was started in October, 1972, and works on a five-day basis, Monday through Friday, from dawn to dusk. It accepts 42,000 cubic yards of solid wastes per month, or 10,500 tons/month (equivalent to a daily loading of 477 tons). Thus, the total loading of solid waste of both city and private landfill sites amounts to 1,666 + 477 = 2,143 tons per day.

The City of Memphis has a contract with the private sector organization for the use of their landfill. Basically, this contract leaves full operations of the site in the hands of the company but guarantees that the city will pay for disposing of a minimum of 700,000 cubic yards of wastes per year. The charges to the city are on a per-load basis and are presented in Table 8.

TABLE 8
RATES FOR DISPOSAL AT THE PRIVATE SECTOR SITE

1,320,000 cubic yards or more during a twelve month period	- all at 45¢ per cubic yard
1,000,000 to 1,320,000 cubic yards during a twelve month period	- all at 50¢ per cubic yard
700,000 to 1,000,000 cubic yards during a twelve month period	- all at 55¢ per cubic yard

In addition to city collectors, commercial haulers dispose of another 434 tons per day. The composition and quantities of this waste as of June 1972, are shown in Table 9.

TABLE 9
COMPOSITION AND QUANTITIES OF COMMERCIAL SOLID WASTE DISPOSED AT THE PRIVATE SECTOR SITE

COMMERCIAL:
Total 434 Tons/Day (Primarily regulated private)

Composition	As Received %	Tons/Day
Paper Products	75	325.0
Wood	10	43.4
Plastics	4	17.3
Garbage	3	13.0
Metals	5	21.6
Glass	3	13.0
	100	433.3

Some of the commercial wastes go to the city and private landfills previously described. The remainder goes to the county-operated landfill at the County Penal Farm east of Memphis. This landfill accepts about 40,000 cubic yards a month, or 10,000 tons per month.

Apart from these three landfill sites, the City of Memphis has a Class IV Waste (pathological) incinerator intended for disposal of dead animals, hospital wastes, laboratory test wastes from the University, and spoiled foods, the largest single source consisting of dogs. The incinerator has a design capacity of one ton/hr., but seems to be utilized at 3,000 lb. per day (8 hr.) in actual operation. It is operated on a six-day/wk. basis on a 12-hour/day shift, which involves 8 hour burning time with the remaining 4-hour period being devoted to start-up, shut down, and cleaning. The incinerator structure is located below ground in a 50-year-old building (50 ft. wide by 80 ft. long) which at one time housed a municipal refuse incinerator. Solid waste is fed into the incinerator through two hoppers of one cubic yard capacity each. A primary chamber with three burners, and a secondary chamber with two burners are used for incineration. The remaining debris is quenched at the end of the day's operation. The gaseous emissions are passed through a scrubber and then released through the stack. The unit was purchased in September, 1972, for a sum of $122,000. Operating and maintenance costs average $15,000/month, and one laborer is employed for incinerator operation.

Apart from the four disposal facilities described above, Memphis has a public recycling program called Project Voluntary Recycling that is sponsored primarily by four civic clubs: the Junior Chamber of Commerce, the League of Women Voters, the Environmental Action Council, and the Key Club. This program has concentrated on newspaper collection at 30 shopping centers around the Memphis area. Sixty tons of newspaper are collected per month, and are marketed to boxboard and roofing felt manufacturers. In addition, some glass and metals are collected, although to date, only clear glass as glass cullet and ferrous beer cans have been marketable. The total revenue from the recycling operation is estimated at $6,000 per year.

5.6: Equipment Description

The Division of Sanitation Services of Memphis has a large fleet of different types of vehicles that it uses to perform the collection activities in the city. Table 10 indicates that most of the vehicles are twenty yard packers and, of these, the greatest fraction is the International Harvester/Heil configuration. The two other body types are new additions to the fleet as, previously, the Heil body was used exclusively. The other two major components of the fleet are Scouts and Bob Trucks which are principally used for satellite vehicles and bulky item collection, respectively. The remaining vehicles and equipment are used for the variety of other collection tasks as indicated by Table 10.

TABLE 10
COLLECTION EQUIPMENT DESCRIPTION

Vehicle	Make	Capital[1] Cost ($)	Number Possessed by City	Normal Life (years)
Packers	Int. Harv. w/ Heil	8764 - 11,903	205	5
	Int. Harv. w/ Leach	11,903 - 12,067	53	5
	Int. Harv. w/ Garwood	---- ----	6	5
Bob Trucks	Int. Harvester	4771	32	5
	Ford	3942 - 4553	33	5
Scout	Int. Harvester	3421 - 3553	64	4
Tidy-Bug	Hagie	7200	1	3
Leaf Machine	Tarrant	4395 - 5578	24	5
Vac-All	Wayne	27,900	1	7
	Int. Harvester	29,150	7	7
Brush picker	Ford	5020	1	7
	Int. Harvester	4940		
Sweeper	Mobil	13,740 - 14,900	7	7
	Wayne	13,740 - 16,900	8	7
Flusher	Int. Harvester	6429 ('63)	2	7
Automobile	Ford	1934 ('64) - 2600 ('68)	4	7
	Rambler	1978 ('65)	1	
Wagon	Ford	1760 ('57)	1	7
Pick-up (3/4 ton)	Chevrolet	1546 ('57)	1	5
	Int. Harvester	1535 ('57) - 2530	13	5
	Ford	2029 - 3000	4	5
PB Loader	Ford	13,927	4	5
	Int. Harvester	5574	1	5
Grease truck	Int. Harvester	9959 ('59)	1	5
Tire truck	Ford	4867 - 6330	3	5
Stake truck	Int. Harvester	4043	2	5
Tractor type	Ford	3944 - 4395	2	5
Dump type	Int. Harvester	5438 ('57) - 5488 ('59)	4	5
Flat bed	Ford	3942 ('67)	1	5

[1] These figures reflect the extrema of the ranges. The dates appearing in parenthesis are presented to explain lower values than would normally be expected.

Table 10 indicates that there is one "Tidy-Bug" in the Memphis fleet but there are an additional 15 units on order. These vehicles are designed for satellite operations and, because of their narrow configuration, can be effectively used in both alleys and on driveways. Since Memphis does collect in a number of difficult alley situations, these vehicles should enhance collection effectiveness.

At this time, there are also a number of transfer tractors and trailers on order. These will be used when the transfer station operation is initiated later this year and, in fact, the drivers for these vehicles are now in training.

5.6.1: Financing and Cost

All new and replacement equipment is financed from the General Fund and requests are made in the capital outlay section of the Budget Request form submitted by the director of the division. Currently, expenditures for motor vehicle equipment is approximately 5 percent of the total operating and capital expenditures of the division. There is no formal depreciation schedule; consequently, sinking funds are not established for vehicle replacement. The current depreciation schedule for compactor collection vehicles is indicated by Table 10, but a new one is being introduced into the system. It is felt that the real useful lives of chassis and bodies are three and six years, respectively so the new schedule will reflect this policy.

5.6.2: Vehicle Maintenance Policies

The Division of Sanitation Services maintains essentially all of the city motor vehicles, with the exception of the Park Commission and Fire Department vehicles. Consequently, the maintenance policies for sanitation equipment are more rigid than found in systems having maintenance services performed outside the sanitation organization.

There are a number of policies used for preventive maintenance and exhaustive vehicle inspections are performed twice each year. On a daily basis, the driver is expected to check the gas, oil, water, and hydraulic fluid and make sure that belts are tight, the lights are working, and the brakes are functional. Additionally, there are two roving mechanics who perform spot checks according to check lists at vehicle storage sites during different mornings of the week. This policy ensures that the drivers are meeting their responsibilities and, additionally, will identify specific problems which require more experience to identify.

Every week, the rollers and other moving parts of the compactor equipment are greased and every three weeks, extensive lubrication is performed. At this time, the oil is changed, filters are cleaned or replaced, and the chassis is lubricated. More infrequent lubrication requirements, such as wheel bearings, universal joints and the like are done according to the schedule recommended by the manufacturer. The semiannual vehicle inspections are far more rigorous than the state currently requires. Each vehicle is checked for the proper operation of all safety equipment, the allignment and front suspension are examined, break drums and linings are inspected and other similar activities are performed.

All normal preventive maintenance is done at the six truck storage installations with major maintenance and exhaustive inspections being performed at the central shop. Emergency repairs are performed on the road by six day crews and one night crew. Vehicles requiring extensive repair are towed to the Central Shop.

5.6.3: Vehicle Replacement Policies

As previously mentioned, packer vehicles are now on a new replacement schedule of three years for chassis and six years for bodies. This policy was chosen as a result of the Mainstem data analysis which has been in operation for about 15 months. Since this program will continue to be used, it is not likely that the new schedule will be rigorously followed inasmuch as the status of every piece of equipment is available. Poor equipment will be disposed earlier than scheduled, whereas more reliable vehicles are likely to be kept *longer.*

The decision to replace existing equipment or purchase new vehicles is made by the division head under the recommendation of area supervisors and inspection of the Mainstem data. This form of participatory management is particularly applicable because the supervisory personnel are closely acquainted with all of the equipment that is used by the division. After the decision is made, equipment requirements are formulated with certain specifications on critical components. Among these, for example, would be standard transmissions, special differentials, spring pads and certain performance standards. The specifications and terms of delivery are quite rigid. In fact, for the latest equipment purchase, the city was able to acquire two-year warranties on both chassis and body from the manufacturer. Bids are requested and the lowest responsible response is accepted.

Vehicles which have been replaced were formerly traded on the new equipment. This is no longer practiced because the city has found that it could recover more revenue by the sale of such vehicles at public auction. Additionally, this new policy makes vehicle replacement a "clean deal" affair which removes potential problems from specification writing and subsequent negotiations.

5.7: Financial Aspects of the Memphis Solid Waste Management System

The municipal solid waste collection system of Memphis currently relies on one source of revenue for its operations, the General Fund. The fund is generated by various taxes and fees that are collected by the city government. Specifically earmarked for solid waste activities, revenue obtained from user charges for collection, inspection of private haulers, and disposal services represents a substantial source of revenue for the General Fund. The collection fee of $2.50 per month per household for twice weekly backyard service plus the inspection fees charged private haulers (50¢ per stop per month) account for revenues equivalent to slightly under 60 percent of the cost of operating the total solid waste management system. Additionally, the city charges private haulers $0.45 per cubic yard for material brought to city disposal sites. This money, like the collection and inspection fees, is for solid waste activities and goes into the General Fund.

The budgetary process for the Division of Sanitation Services begins with the director and his zone and area supervisory personnel who prepare budgets for their respective districts. These budgets are then aggregated and other division expenses added in. During this period there is little formal communication between the director and the Division of Budget and Finance. The Division of Budget and Finance does not give the director a "target" budget to meet.

When the director is satisfied with his budget, he submits a draft copy to the Division of Budget and Finance. The Division of Budget and Finance then reviews the draft in the light of expected revenues. Differences between the Division of Budget and Finance and the director are discussed and changes, if necessary, are made to the draft budget.

After receiving budgets from the various divisions, the Division of Budget and Finance, working with the Comptroller's office, prepares a consolidated budget. The Chief Administrative Officer reviews the budget requests with the Director of Budget and Finance and then holds administrative budget hearings for each division. Finally, the budget is presented to the Mayor for review and approval.

Following the Mayor's approval, the budget recommendation is presented to the Council for final action. Public hearings on the budget are held by the Council's budget committee with each division director presenting, defending and justifying his budget request before the Council. In the final decision making process, the Council has the authority to make modifications to the budget.

The actual preparation of the Sanitation Division budget is a complex process. The director receives input from many sources besides his zone and area supervisors. The director uses Mainstem data to compile and analyze equipment costs. The director must also take into account the urban growth rate projections supplied by the Planning Commission. Union-negotiated benefits and salary increases are incorporated into the budget. Historical trend data is evaluated and used for general guidance in budget preparation. Also incorporated in the budget are other items which affect revenues and expenses, such as an increase in the fee charged at private landfills. Finally, the draft budget is prepared and sent to the Division of Budget and Finance.

In 1972 there was an organizational change in the City of Memphis. The Sanitation Division, originally a Bureau under Public Works, was taken from Public Works and made a separate division. However, disposal operations remained within the Public Works Division. In actuality, there are two separate budgets for solid waste management services in Memphis. The budget of the Sanitation Division covers the cost of collection and other related services. The Bureau of Solid Waste Disposal under the Public Works Division has its own separate budget.

5.7.1: Sources of Revenue

The General Fund serves as the revenue source for most city government functions in Memphis including solid waste collection and disposal. A wide variety of taxes and charges are used as revenue sources for the General Fund, as shown in Table 11 for FY 1972-73.

TABLE 11

GENERAL FUND REVENUE SOURCES FOR FY 72/73
GENERAL FUND

Source	Estimated Receipts
Property Taxes--Municipal	
Ad Valorem Taxes-Current	$ 15,183,025
Ad Valorem Taxes-Prior Year	285,000
Interest Penalties and Commissions	345,050
Receipts in Lieu of Taxes	132,100
Total Property taxes--Municipal	$ 15,945,175
Other Taxes--Municipal	
Local Sales Tax	$ 13,180,000
Beer Sales Tax	4,037,250
Alcoholic Beverage Tax	1,683,550
Liquor by Drink Tax	216,150
One Cent Cigarette Tax	745,950
Total Other Taxes--Municipal	$ 19,862,900
State Shared Funds	
Sales Tax	$ 7,431,850
State Apportionment TVA	67,700
Income Tax	928,500
Beer Tax	229,850
State Alcoholic Beverage Tax	141,225
State Gas Tax (Operating Recovery)	650,000
Total State Shared Funds	$ 9,449,125
Licenses	
Automobile Licenses (Tag Fund)	$ 5,135,166
Vehicle Licenses (Tag Fund)	633,660
Business Licenses	70,000
Dog Licenses	162,000
Alcoholic Beverage Licenses	50,500
Liquor by Drink Licenses	76,800
Business Tax	400,000
Total Licenses	$ 6,528,126
Inspections	
Motor Vehicle Inspection	$ 1,100,000
Building Inspections	563,025
Interior Electrical Inspections	262,025
Sewer Connections	267,900
Plumbing Inspections	166,125
Other Inspections	200,450
Total Inspections	$ 2,564,525
Judicial Functions	
City Court	$ 738,400
City Traffic Bureau	1,076,600
Juvenile Court	85,750
Total Judicial Functions	$ 1,900,750

Source	Estimated Receipts
Investments and Property	
Rents	$ 47,800
Interest Earned on Investments	1,100,000
Sale of Capital Assets	50,000
Total Revenue from Use of Money and Property	$ 1,197,800
Charges for Current Services	
International Airport	$ 604,000
City Service Fees	6,323,800
Landfill Fees	652,350
States Grants Re: Landfill	300,000
Sewer Service Charges (Sewer Treatment Funds)	1,360,453
Parking Meters	328,750
City Owned Parking Facilities	78,700
Ambulance Service Fees	280,000
Miscellaneous Departmental Revenue	383,612
Total Charges for Current Services	$ 10,131,665
Grants and Other Revenue	
Accounts Receivable--Prior Years	$ 100,000
Port Commission	150,000
Miscellaneous Revenue	125,000
Coliseum	85,000
River Front Harbor Commission	15,000
Total Grants and Other Revenue	$ 475,000
Total General Fund Revenues	$ 74,654,016
Use of Surplus	1,823,542
Federal Grants Receivable	336,880
Total General Fund	$ 76,814,438

As shown, the city obtains about 20.7 percent of its General Fund revenues from the ad valorem property taxes, 26 percent from other taxes, chiefly the local sales tax and the beer sales tax, 12 percent from the state via various mechanisms, and 13 percent from charges for current services. The latter source includes those revenues raised by the city service fee for solid waste collection and the landfill fee, anticipated at $6,323,800 and $652,350 respectively for 1972-73.

In Table 12, the General Fund budgeted revenues for the previous five years are shown.. In only the last budget year, 1972-73, have the revenues raised by the landfill fee been budgeted separately; previously, they were included in the city service fee.

TABLE 12

GENERAL FUND REVENUES

Year	City Service Fee	Landfill Fee
1972-73	$6,323,800	$652,350
1971-72	6,538,500	*
1970-71	6,480,000	*
1969-70	6,100,000	*
1968-69	6,300,000	*

*Included in the city service fee for the years preceding 1972-73.

The revenues generated by the collection and disposal fees amounted to $6,976,150 in 1972-73, or approximately 62 percent of the appropriations budgeted for collection and disposal operations ($11,252,900). The city's solid waste operations can be considered to be operating a partially self-sufficient system in terms of the direct charge for service concept.

As a major contributor to the General Fund, revenues from the property tax have remained a fairly constant amount over the past five years, ranging between $13.2 million to $15.1 million, while revenues from other sources, most notably the local sales tax and user charges and fees, have increased significantly. Total General Fund revenues increased from $58.8 million in 1968-69, to $88.4 million in 1971-72, before budget tightening resulted in a $76.8 million budget for 1972-73. The property tax rate has also remained fairly constant over the past five years, ranging from $1.98 per $1,000 of assessed valuation to $2.25 per $1,000 to the 1972 rate of $2.13 per $1,000.

The city does not utilize bonds or other forms of long-term financing for its solid waste collection and disposal operations. Nor does it have any subsidies or grants as additional sources of funds other than a $200,000 State grant for its landfill.

The budgeted appropriations for sanitation services for the previous five years are shown in Table 13.

TABLE 13

GENERAL FUND APPROPRIATIONS FOR SANITATION SERVICES

Fiscal Year	Collection	Disposal
1972-73	$10,395,327	$857,573
1971-72	9,636,915	*
1970-71	8,169,385	*
1969-70	7,745,011	*
1968-69	6,587,845	*

*Disposal appropriations included in collection appropriations

5.7.2: Expenditures

The expenditures of the Division of Sanitation Administration and the Bureau of Solid Waste Disposal are monitored by means of two types of financial statements. The first financial document is the monthly Appropriation Statement. This document shows, for each division and bureau, current month expenditures, year-to-date expenditures and unencumbered balances for each line item. The document also shows what portion of the appropriation has already been expended as well as the unexpended portion. Additionally, there is an annual accounting statement which presents all appropriations and expenditures by major expense categories for each division and bureau. Table 14 is an example of this statement for the end of fiscal year 1971-1972.

The second document type used to monitor city-wide financial data is the projected trend analysis. This document, which appears in the middle of the fiscal year, compares the city budget with anticipated revenues as determined by an analysis of six months' revenue trend. It illustrates the extent to which revenues and expenditures are in line with the city budget. The projected trend analysis is broken down to the bureau level. Bureau trend projections which differ from those presented in the budget are brought to the attention of the Budget Office for examination to determine if all pertinent facts are properly considered. This mid-year review indicates the bureaus which are significantly varying from their budget. The use of projected trend analysis allows the city a "snapshot" picture of its fiscal condition at a time period when corrective actions can still be taken.

A summary of sanitation expenditures for the previous four years, with a projected total expenditures for fiscal 1972-73 based upon expenditures to date is shown in Table 15. As indicated, total expenditures increased by 51 percent over the five-year period from $6.8 million to $10.3 million. Personnel expenditures, which represent nearly 85 percent of the total expenditures, have increased similarly by 43 percent. However, even higher rates of increase were recorded for both Operations and Maintenance expenditures and Capital Outlay expenditures, i.e., increases of 134 percent and 130 percent, respectively. This is indicative of attempts to reduce the labor intensiveness of the sanitation operations with the allocation of increased resources to additional machinery and equipment purchases and other capital outlays. As noted above, all capital expenditures are financed from current revenues; no debt is utilized for these purchases. Included in the capital outlays are purchase of solid waste collection trucks.

Since the 1971-72 budget, the accounting for expenditures for solid waste disposal operations has been maintained separately. Previously, these expenditures were included with those for the collection operation. As shown

TABLE 14

MONTHLY APPROPRIATION STATEMENT, FY 1972
(End-of-Year Statement)

DIVISION PUBLIC WORKS DIVISION
BUREAU SANITATION

CITY OF MEMPHIS, TENN.
APPROPRIATION STATEMENT 27 50

PAGE NO. 132
DATE 06/30/72

EXP. CODE	DESCRIPTION	APPROPRIATION	EXPENDITURES W/O ENCUMBRANCES				ENCUMBRANCE	UNENCUMBERED BALANCE	%
			CURRENT MONTH	%	YEAR-TO-DATE	%			
	PERSONNEL								
	SALARIES								
101	SALARIES - FULL TIME PERMANENT	7,224,030	813,164	11.26	7,196,253	99.62		27,777	.38
105	SALARIES - PART TIME TEMPORARY	265,210	37,048	12.99	265,375	100.06		165-	.06-
106	SALARIES - OVERTIME	197,000	30,462	15.46	199,531	101.28		2,531-	1.28-
109	EXPENSE RECOVERIES	220,000-	17,771-	8.08	208,051-	94.57		11,949-	5.43
	TOTAL SALARIES	7,466,240	862,924	11.53	7,473,108	99.82		13,132	.18
	FRINGE BENEFITS								
151	PENSIONS	93,350	7,135	7.64	92,609	99.21		741	.79
152	SOCIAL SECURITY	346,395	26,173	7.56	344,718	99.52		1,677	.48
153	HOSPITALIZATION	233,450	18,428	7.89	226,714	97.11		6,736	2.85
154	GROUP LIFE	26,870	8-	.03-	26,714	99.42		156	.58
159	EXPENSE RECOVERIES	55,000-	4,443-	8.08	50,641-	92.07		4,359-	7.93
	TOTAL FRINGE BENEFITS	645,065	47,206	7.33	640,114	99.23		4,951	.77
**	TOTAL PERSONNEL	8,131,305	910,210	11.19	8,113,222	99.78		18,083	.22
	OPERATIONS AND MAINTENANCE								
	SERVICES OTHER THAN PERSONNEL								
206	ALARM & CLOCK REGULATION SERVICES	2,050			1,827	89.10		224	10.90
214	LAUNDRY & OTHER SANITARY SERVICES	990	63	6.41	916	92.48		74	7.52
215	UTILITY SERVICES	12,525	1,264	10.09	12,362	98.70		163	1.30
217	MAINTENANCE SERVICE ON EQUIPMENT	4,900	4,540	92.66	6,585	134.39		1,685-	34.39-
220	POSTAGE	10	1	8.00	1	8.00		9	92.00
222	REPAIRS TO EQUIPMENT	4,400	332	7.55	4,055	92.15		345	7.85
223	REPAIRS & MAINTENANCE TO STRUCTURES	2,810	26	.91	2,583	91.91		227	8.09
226	TELEPHONE & TELEGRAPH	4,225	413	9.79	3,938	93.20		287	6.80
227	TRAVELING EXPENSE	100			2	2.00		98	98.00
228	OTHER PROFESSIONAL & TECHNICAL SVS	37,600	25,332	67.37	37,626	100.07		26-	.07-
229	AUTOMOBILE ALLOWANCES	48,100	5,244	10.90	46,411	96.49		1,689	3.51
235	REPAIRS & MAINT OF VEHICLE EQUIP	8,010	324	4.04	1,385	17.30		6,625	82.70
250	INTER BUREAU CHARGES - PERSONNEL	4,500	352	7.81	3,886	86.35		614	13.65
251	INTER BUREAU CHARGES - OTHER	1,300	99	7.62	982	75.54		318	24.46
260	CITY HALL PRINTING	1,500	111	7.40	1,073	71.56		427	28.44
265	CITY HALL SUPPLIES	1,500	209	13.93	1,364	90.95		136	9.05
299	EXPENSE RECOVERIES	60,000-	6,697-	11.16	56,436-	94.06		3,564-	5.94
	TOTAL SERVICES OTHER THAN PERSONNEL	74,520	31,613	42.42	68,559	92.00		5,961	8.00
	MATERIAL INCLUDING FREIGHT								
301	ASPHALT PRODUCTS	485	6	1.34	490	101.08		5-	1.08-
304	PIPE & FITTINGS	588	61	10.33	508	86.34		80	13.66
305	GRAVEL	280			280	99.96			.04
307	LIME CEMENT & PLASTER	12			3	21.17		9	78.83
306	LUMBER & WOOD PRODUCTS	1,200	171	14.28	1,344	111.98		144-	11.98-
309	OTHER MATERIALS	50			11	21.14		39	78.86

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TABLE 14 (Continued)

DIVISION PUBLIC WORKS DIVISION
BUREAU SANITATION

CITY OF MEMPHIS, TENN.
APPROPRIATION STATEMENT 27 50

PAGE NO. 133
DATE 06/30/72

EXP. CODE	DESCRIPTION	APPROPRIATION	EXPENDITURES W/O ENCUMBRANCES				ENCUMBRANCE	UNENCUMBERED BALANCE	%
			CURRENT MONTH	%	YEAR-TO-DATE	%			
310	PAINTS OILS & GLASS	200	18	8.92	128	63.98		72	36.02
312	SAND								
313	SMALL HARDWARE	600	70	11.73	571	95.14		29	4.86
314	STONE LIMESTONE & DUST								
316	STRUCTURAL AND TOOL STEEL & IRON	550	67	12.27	610	110.92		60-	10.92-
317	FENCING	200			10	5.15		190	94.86
	TOTAL MATERIAL INCLUDING FREIGHT	4,165	394	9.47	3,954	94.94		211	5.06
	SUPPLIES								
402	AMMUNITION & EXPLOSIVES	3			3	99.33			.67
403	BEDDING LINENS & HOUSEHOLD SUPP	550	62	11.18	479	87.09		71	12.91
404	CLEANING & SANITARY SUPPLIES	3,400	352	10.36	2,827	83.13		573	16.87
405	CLOTHING	15,575	242	1.55	15,179	97.46		396	2.54
407	DRAFTING & PHOTOGRAPHIC SUPPLIES	100			35	35.05		65	64.95
408	DRUGS & MEDICINES	124			12	9.87		112	90.13
409	FOOD SUPPLIES	300						300	100.00
411	GAS & OXYGEN	65	6	8.49	14	21.58		51	78.42
412	GAUZE & BANDAGES	68	4	5.56	58	85.16		10	14.84
413	HAND TOOLS & MINOR EQUIPMENT	18,161	2,853	15.71	18,250	100.49		89-	.49-
414	HOSE FIRE GARDEN ETC	1,363	48	3.52	377	27.68		986	72.32
415	HOSP LAB & OTHER SCIENTIFIC SUPP	54			33	61.02		21	38.98
417	MAGAZINES PAMPHLETS & BOOKS	625	2	.38	340	54.41		285	45.59
418	MECHANICS ENGINEERS & ELECT SUPP	1,250	131	10.47	1,239	99.15		11	.85
419	VEHICLE GASOLINE	135,280	15,045	11.12	129,145	95.46		6,135	4.54
420	VEHICLE OIL & LUBRICANTS	20,190	2,339	11.58	18,659	92.41		1,532	7.59
421	VEHICLE OTHER SUPPLIES	47,700	7,150	14.99	49,251	103.25		1,551-	3.25-
422	VEHICLE TIRES & TUBES	54,000	6,740	12.48	49,331	91.35		4,669	8.65
423	OFFICE SUPPLIES	410	27	6.52	306	74.54		104	25.46
424	FUELS OTHER THAN GASOLINE	1,100	33	3.04	259	23.57		841	76.43
425	PAINTING SUPPLIES	75			29	38.95		46	61.05
426	WATER & ICE	2,600			1,160	44.62		1,440	55.38
428	EQUIPMENT REPAIR PARTS	11,500	2,942	25.59	11,097	96.49		403	3.51
431	FIRE FIGHTING SUPPLIES	82			70	85.88		12	14.12
435	EDUCATIONAL SUPPLIES	250						250	100.00
	TOTAL SUPPLIES	314,625	37,975	12.06	298,152	94.70		16,673	5.30
	FIXED CHARGES AND CONTRIBUTIO								
506	LUMP SUM APPROPRIATIONS	240,000	19,175	7.99	218,252	90.94		21,748	9.06
510	RENTALS	600	620	103.33	1,160	193.33		560-	93.33-
511	OPERATING LICENSE	415	5	1.08	217	52.17		199	47.83
599	EXPENSE RECOVERIES				3-			3	
	TOTAL FIXED CHARGES AND CONTRIBUTIO	241,015	19,799	8.21	219,625	91.13		21,350	8.87
**	TOTAL OPERATIONS AND MAINTENANCE	634,525	89,781	14.15	590,291	93.03		44,234	6.97
	CAPITAL OUTLAY								
	PROPERTIES								

TABLE 14 (Continued)

DIVISION PUBLIC WORKS DIVISION
BUREAU SANITATION

CITY OF MEMPHIS, TENN.
APPROPRIATION STATEMENT

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EXP. CODE	DESCRIPTION	APPROPRIATION	EXPENDITURES W/O ENCUMBRANCES				ENCUMBRANCE	UNENCUMBERED BALANCE	%
			CURRENT MONTH	%	YEAR-TO-DATE	%			
604	COMMUNICATIONS EQUIPMENT	12,250			12,289	99.99		1	.01
606	FURNITURE & FURNISHINGS	6,820	3,176	46.57	5,400	79.18		1,420	20.82
607	HEATING COOLING & ELECTRICAL EQUIP	2,985			1,807	60.53		1,178	39.47
613	PRODUCTION & CONSTRUCTION EQUIPMENT	17,505			16,186	92.47		1,319	7.53
617	TRANSPORTING & CONVEYING EQUIPMENT	253,759			253,759	100.00			
619	OFFICE MACHINES & DEVICES	1,426	548	38.45	1,360	95.38		66	4.62
622	CLEANING EQUIPMENT	7,500						7,500	100.00
	TOTAL PROPERTIES	302,205	3,725	1.23	290,801	96.20		11,484	3.80
	REPLACEMENTS								
713	REPL OF PRODUCTION & CONST EQUIP	28,426			27,925	98.24		501	1.76
717	REPL OF TRANS & CONVEYING EQUIP	104,041	70,109	67.39	104,040	100.00		1	
	TOTAL REPLACEMENTS	132,467	70,109	52.93	131,965	99.62		502	.38
***	TOTAL CAPITAL OUTLAY	434,752	73,834	16.98	422,766	97.24		11,986	2.76
	GRAND TOTAL	9,200,582	1,073,825	11.67	9,126,279	99.19		74,303	.81
	PROPORTIONATE COMPARISON			8.33		100.00			

TABLE 15

SANITATION EXPENDITURES FOR FISCAL 1968-69 TO FISCAL 1972-73

Description Year	Fiscal 1968-69	Fiscal 1969-70	Fiscal 1970-71	Fiscal 1971-72	Fiscal 1972-73*
Total Personnel Expenditure	$6, 166, 991	$7, 119, 365	$7, 912, 470	$8, 113, 222	$8, 830, 490
Operations and Maintenance					
Total Services Other Than Personal	103, 092	114, 619	220, 889	68, 559	296, 541
Total Materials Including Freight	6, 260	4, 034	4, 123	3, 954	5, 487
Total Supplies	299, 823	372, 189	355, 830	298, 152	314, 263
Total Fixed Charges and Contributions	39, 376	40, 855	33, 055	219, 625	248, 074
Total Operations and Maintenance	369, 799	449, 987	547, 787	590, 291	864, 365
Total Capital Outlay	252, 813	372, 732	494, 180	422, 766	582, 185
GRAND TOTAL	$6, 789, 603	$7, 942, 084	$8, 954, 437	$9, 126, 279	$10, 277, 040

*Annual projection based upon actual expenditures through 1/31/73 - does not include disposal expenditures.

in Table 16, disposal operations do not require the same level of labor intensiveness as the collection operations. The reliance on capital expenditures was further augmented when an additional landfill site was acquired, requiring new vehicles to operate on the new site, combined with the additional costs involved of "capping off" the old disposal sites. This development is reflected in the 156-percent increase in operations and maintenance expenditures from 1971-72 to 1972-73, and the 113-percent increase in capital outlay expenditures in the same period. Personnel expenditures also increased by 23 percent, reflecting the additional manpower requirements to operate the new landfill site.

TABLE 16

BUREAU OF SOLID WASTE DISPOSAL
EXPENSES AND APPROPRIATIONS

	Expense 1971-72	Appropriation 1972-73	Appropriations Request 1973-74
Total Personnel (including fringe benefits)	364,931	447,227	469,378
Operations and Maintenance			
Services Other Than Personnel	57,902	87,579	64,314
Materials Including Freight	738	17,286	29,750
Total Supplies	30,262	65,275	116,337
Total Fixed Charges and Contributions	1,598	61,267	36,648
Total Capital Outlay	107,994	229,757	318,860
Total Budget or Appropriation	563,425	908,391	1,035,287

APPENDIXES

APPENDIX A

TENNESSEE DISPOSAL ACT

REGULATIONS GOVERNING SOLID WASTE PROCESSING AND DISPOSAL IN TENNESSEE

1796

TENNESSEE DEPARTMENT OF PUBLIC HEALTH
1971

SOLID WASTE DISPOSAL ACT
Tennessee Code Annotated - Sections 53-4301 - 53-4315

SECTION 53-4301. This Act shall be known and may be cited as the "Tennessee Solid Waste Disposal Act".

SECTION 53-4302. In order to protect the public health, safety and welfare, prevent the spread of disease and creation of nuisances, conserve our natural resources, enhance the beauty and quality of our environment and provide a coordinated state-wide solid waste disposal program, it is declared to be the public policy of the State of Tennessee to regulate solid waste disposal to:

(1) Provide for safe and sanitary processing and disposal of solid wastes.
(2) Develop long-range plans for adequate solid waste disposal systems to meet future demands.
(3) Provide a coordinated state-wide program of control of solid waste processing and disposal in cooperation with federal, state, and local agencies responsible for the prevention, control, or abatement of air, water, and land pollution.
(4) Encourage efficient and economical solid waste disposal systems.

SECTION 53-4303. The terms used in this Act are defined as follows:

"Solid Waste". Garbage, refuse, and other discarded solid materials, including solid-waste materials resulting from industrial, commercial, and agricultural operations, and from community activities, but does not include solids or dissolved material in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial waste water effluents, dissolved materials in irrigation return flows or other common water pollutants.

"Person". Any and all persons, natural or artificial, including any individual, firm or association, and municipal or private corporation organized or existing under the laws of this State or any other state, and any governmental agency or county of this State.

"Solid Waste Disposed System". The relationship of the coordinated activities of and resources for processing and disposal of solid wastes within a common geographical area and under the supervision of any person or persons engaging in such activities.

"Solid Waste Processing". An operation for the purpose of modifying the characteristics or properties of solid waste to facilitate transportation or disposal of solid wastes including, but not limited to, incineration, composting, separation, grinding, shredding, and volume reduction.

"Solid Waste Disposal". The process of placing, confining, compacting, or covering solid waste except when such solid waste is for reuse, removal, reclamation, or salvage.

"Department". The Tennessee Department of Public Health.

"Commissioner". The Commissioner of the Tennessee Department of Public Health or his authorized representative.

"Health Officer". The director of a city, county, or district health department having jurisdiction over the community health in a specific area, or his authorized representative.

SECTION 53-4304. It shall be unlawful to:

(1) Place or deposit any solid waste into the waters of the State except in a manner approved by the Department and the Tennessee Stream Pollution Control Board.
(2) Burn solid wastes except in a manner and under conditions prescribed by the Department and the Tennessee Air Pollution Control Board.
(3) Construct, alter, or operate a solid waste processing or disposal facility or site in violation of the rules, regulations, or orders of the Commissioner or in such a manner as to create a public nuisance.

SECTION 53-4305. The Department shall exercise general supervision over the construction of solid waste processing facilities and disposal facilities or sites throughout the State. Such general supervision shall apply to all features of construction of solid waste processing facilities and disposal facilities or sites which do or may affect the public health and safety or the quality of the environment, and which do or may affect the proper processing or disposal of solid wastes. No new construction shall be initiated nor shall any change be made in any solid waste processing facility or disposal facility or site until the plans for such new construction or change have been submitted to and approved by the Department. Records of construction or plans for existing facilities or sites shall be made available to the Department upon request of the Commissioner. In granting approval of such plans, the Department may specify such modifications, conditions, and regulations as may be required to fulfill the purposes of this Act. The Commissioner is empowered to adopt and enforce rules and regulations for the construction of new facilities and sites and the alteration of existing facilities and sites to be effective on and after July 1, 1970. The Commissioner is authorized to investigate solid waste processing facilities and disposal facilities or sites throughout the State as often as he deems necessary.

SECTION 53-4306. No solid waste processing facility or disposal facility or site in any political subdivision of the State of Tennessee shall be operated or maintained by any person unless he has registered with the Commissioner in the name of such person for the specified facility or site. The Commissioner is authorized to specify procedures for registration by means of rules and regulations duly promulgated under the authority of this Act.

SECTION 53-4307. The Department shall exercise general supervision over the operation and maintenance of solid waste processing facilities and disposal facilities or sites. Such general supervision shall apply to all the features of operation and maintenance which do or may affect the public health and safety or the quality of the environment and which do or may affect the proper processing and disposal of solid wastes. The Commissioner is empowered to adopt and enforce rules and regulations governing the operation and maintenance of such facilities, operations, and sites to be effective on and after July 1, 1971. Provided further, municipalities, cities, towns, and local Boards of Health may adopt and enforce such rules, ordinances, and regulations equal to or exceeding those adopted by the Commissioner, and consistent with the purposes of this Act. For exercising such general supervision, the Commissioner is authorized to investigate such facilities, operations, and sites as often as he deems necessary.

SECTION 53-4308. The Commissioner is authorized to delegate the duties and responsibilities granted to him by this Act to local Health Officers to the extent deemed necessary by the Commissioner to implement the provisions of this Act.

SECTION 53-4309. The Department is authorized to review and approve grants and loans from the federal government and other sources to counties, cities, towns, municipalities, or any combination thereof to assist them in designing, acquiring, constructing, altering, or operating solid waste processing facilities and disposal facilities or sites. The Department is authorized further to accept and consider only those applications for grants from counties, cities, towns, and municipalities who have officially adopted a plan for a solid waste disposal system or who are included in an officially adopted plan for a solid waste disposal system which covers two or more such jurisdictions. The Department is authorized to approve or disapprove such plans in accordance with the purposes of this Act.

SECTION 53-4310. This Act shall not prohibit any person from disposing of his own solid waste upon his own lands provided such disposal does not create a public nuisance or a hazard to the public health.

SECTION 53-4311. There is hereby created a consultant committee to be known as the Solid Waste Disposal Advisory Committee. The purpose of this committee is to advise the Commissioner in his establishing, modifying, or amending rules and regulations as provided for in Section 5, 6, 7, and 9 of this Act. Tentative rules and regulations proposed by the Commissioner shall be reviewed and acted upon by resolution adopted by the Committee with the votes recorded. The Committee may call a public hearing on any such tentative rules and regulations and may prescribe the method of conducting such a hearing including notice thereof. Four of the members of this Committee shall be appointed by the Governor as follows; one shall be engaged in municipal government; one shall be a county judge or chief executive officer of a Tennessee county; one shall be employed by a private manufacturing concern; and one shall be engaged in a field which is directly related to agriculture. These four appointed members' terms of office shall be four years and until their successors are selected and qualified, except the terms of those first appointed shall expire as follows: one at the end of one year after date of appointment; one at the end of two years after date of appointment; one at the end of three years after date of appointment; and one at the end of four years after the date of appointment, as designated by the Governor at the time of appointment. If a vacancy occurs, the Governor may appoint a member for the remaining portion of the unexpired term created by the vacancy. The Governor may remove any appointed member for cause. Three members of the Committee shall be ex officio and appointed as follows: one shall be appointed by the Air Pollution Control Board of the State of Tennessee from its administrative staff; one shall be appointed by the Tennessee Stream Pollution Control Board from its administrative staff; and one shall be the Director of the Tennessee State Planning Commission or his designated representative. The terms of office and the filling of vacancies of ex officio members shall be the responsibility of the appointing authority. The Committee shall hold at least one regular meeting each calendar year at a place and time to be fixed by the Committee. The Committee shall also meet at the request of three members of the Committee. Five members constitute a quorum and a quorum may act for the Committee in all matters. The Director of the Division of Environmental Sanitation of the Tennessee Department of Public Health or his designated representatives shall be Technical Secretary of the Committee. The Technical Secretary shall have no vote at Committee meetings. Members appointed by the Governor shall receive no compensation for their services, and the ex officio members shall receive no additional compensation for their services. All members of the Solid Waste Disposal Advisory Committee and its Technical Secretary shall be compensated for reasonable and necessary expense while in attendance at official meetings of the Committee in accordance with law and regulations governing travel of State employees.

SECTION 53-4312. When the Commissioner finds upon investigation that any provisions of this Act are not being carried out, and that effective measures are not being taken to comply with provisions of this Act, he may issue an order for correction to the responsible person, and this order shall be complied with within the time limit specified in the order. Such order shall be made by personal service or shall be sent by registered mail. Investigations made in accordance with this section may be made on the initiative of the Commissioner.

SECTION 53-4313. Any person against whom an order is issued may secure a review of the necessity for or reasonableness of an order of the Commissioner by filing with the Commissioner a sworn petition, setting forth the grounds and reasons for his objections and asking for a hearing in the matter involved. The Commissioner shall thereupon fix the time and place for such hearing and shall notify the petitioner thereof. At such hearing before the Commissioner, the petitioner and any other interested party may appear in person, and by council present witnesses, and submit evidence. Following such hearing, the final order of determination of the Commissioner shall be conclusive, provided that such final order of determination may be reviewed upon petition for common law writ of certiorari therefor, filed within thirty (30) days after such final written order of determination has been issued.

The Chancery Court of Davidson County shall have exclusive original jurisdiction of all review proceedings instituted under the authority and provisions of this Act. Appeals from orders and decrees of said Chancery Court and proceedings brought under the provisions of this Act shall lie to the Supreme Court, despite the fact that controverted questions of fact may be involved therein.

SECTION 53-4314. Any person violating any of the provisions of this Act, or failing, neglecting or refusing to comply with any order of the Commissioner lawfully issued shall be guilty of a misdemeanor and upon conviction, shall be liable to a fine of not less than ten dollars ($10.00) nor more than one hundred dollars ($100.00) for each violation, within the discretion of the court, and each day of continued violation shall constitute a separate offense.

SECTION 53-4315. In addition to the penalties herein provided the Commissioner may cause the enforcement of any orders, rules or regulations issued by him to carry out the provisions of this Act by instituting legal proceedings to enjoin the violation of the provisions of this Act, and the orders, rules or regulations of the Commissioner in any court of competent jurisdiction, and such court may grant a temporary or permanent injunction restraining the violation thereof. The District Attorney General in whose jurisdiction a violation of this Act occurs or the Attorney General of the State shall institute and prosecute such suits when necessity therefor has been shown by those herein clothed with the power of investigation.

* * *

REGULATIONS

GOVERNING THE PLANNING, CONSTRUCTION, OPERATION, AND MAINTENANCE OF SOLID WASTE PROCESSING AND DISPOSAL SYSTEMS IN TENNESSEE

I, Eugene W. Fowinkle, Commissioner of the Department of Public Health of the State of Tennessee, by virtue of the authority vested in me under Chapter 295 of the Public Acts of 1969 hereby promulgate the following regulations relating to the planning, construction, operation, and maintenance of solid waste processing and disposal systems for the purpose of protecting the public health, safety, and welfare; preventing the spread of disease and creation of nuisances; concerving our natural resources; enhancing the beauty and quality of our environment; and providing a coordinated statewide solid waste disposal program.

Now, therefore, the following regulations are hereby adopted, the public welfare requiring it.

REGULATION 1. Definitions:

A. **Bulky Waste** - Large items of refuse such as but not limited to appliances, furniture, auto or large auto parts, trees and branches, and stumps.

B. **Composting** - The controlled biological decomposition of solid organic waste material under aerobic conditions, which shall produce an end product free of pathogenic organisms.

C. **Commissioner** - The Commissioner of the Tennessee Department of Public Health or his authorized representative.

D. **Department** - The Tennessee Department of Public Health.

E. **Garbage** - All kitchen and table waste, and every accumulation of animal or vegetable waste that attends or results from the preparation, dealing on or handling of food stuffs.

F. **Hazardous Waste** - Includes, but is not necessarily limited to, explosives, pathological wastes, radioactive materials, and certain chemicals which shall be determined by the Department.

G. **Health Officer** - The director of a city, county, or district health department having jurisdiction over the community health in a specific area, or his authorized representative.

K. **Incinerator** - A solid waste burning device which provides acceptable controlled combustion resulting in a nuisance free residue composed of little or no combustible or organic material.

I. **Industrial Waste** - All solid wastes which result from industrial processes and manufacturing operations.

J. **Open Burning** - The burning of any matter under such conditions that the products of combustion are emitted directly into the open atmosphere.

K. **Open Dumping** - The depositing of solid wastes into a body or stream of water or onto the surface of the ground without compacting the wastes and covering with suitable material to a depth and at such time intervals as prescribed in these regulations.

L. **Person** - Any and all persons, natural or artificial, including any individual, firm or association, and municipal or private corporation organized or existing under the laws of this State or any other state, and any governmental agency or county of this State.

M. **Refuse** - Putrescible and nonputrescible solid wastes except body wastes, including, but not limited to, garbage, animal carcasses, rubbish, incinerator residue, street cleanings, and industrial waste.

N. **Rubbish** - Nonputrescible solid wastes, consisting of both combustible and noncombustible wastes, such as, but not necessarily limited to, paper, cardboard, tin cans, yard clippings, wood, class, bedding, crockery, plastics, rubber by products, or litter of any kind.

O. **Solid Waste** - Garbage, refuse, and other discarded solid materials, including solid-waste materials resulting from industrial, commercial, and agricultural operations, and from community activities, but does not include solids or dissolved material in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial waste water affluents, dissolved materials in irrigation return flows or other common water pollutants.

P. **Solid Waste Disposal System** - The relationship of the coordinated activities of and resources for processing and disposal of solid wastes within a common geographical area and under the supervision of any person or persons engaging in such activities.

Q. **Solid Waste Processing** - An operation for the purpose of modifying the characteristics or properties of solid wastes to facilitate transportation or disposal of solid wastes including, but not necessarily limited to, incineration, composting, separation, grinding, shredding, and volume reduction.

R. **Solid Waste Disposal** - The process of placing, confining, compacting, or covering solid waste except when such solid waste is for reuse, removal, reclamation, or salvage.

S. **Transfer Station** - An approved place for consolidation or temporary storage of solid waste prior to transportation to a processing operation or the final disposal site.

REGULATION 2. Registration of Disposal or Processing Operation:

A. **Registration Required** - No person, except as herein specified, shall operate or maintain a solid waste processing facility or disposal facility or site within the State of Tennessee without making application for and receiving acknowledgement from the Commissioner. The specific exception shall be for a person disposing of his own solid waste upon his own land provided such disposal does not create a nuisance or a hazard to the public health.

B. **Application for Registration** - Application for registration to operate or maintain a solid waste processing facility or disposal site or facility or site shall be made in writing to the Commissioner at least sixty (60) days, but no more than one-hundred eighty (180) days, prior to the starting of operation. After 180 days the application shall be resubmitted if operation has not begun by that time. Such application shall be on forms furnished by the Department. Written acknowledgement of registration shall be received before operation is started. Application for registration to operate or maintain a solid waste processing facility or a disposal facility or site existing on or before January 1, 1971, shall be in writing to the Commissioner prior to July 1, 1971.

C. **Change of Ownership** - In the event of an intended change of ownership of a solid waste processing facility or a solid waste disposal facility or site, a written application for registration shall be made to the Commissioner by the proposed new owner at least sixty (60) days prior to the proposed change of ownership.

REGULATION 3. Application for Federal, State, or Other Grants and Loans:

All applications made by Tennessee counties, cities, towns, municipalities, or any combination thereof for federal, state, or other grants and loans for assistance in designing, acquiring, constructing, altering, or operating solid waste processing facilities and disposal facilities or sites shall be submitted to the Department for review prior to their submission to the granting agency.

Only those applications shall be accepted and considered which are submitted from counties, towns, and municipalities who have officially adopted a plan for a solid waste disposal system or who are included in an officially adopted plan for a solid waste disposal system which covers two or more such jurisdictions. The Department shall approve or disapprove such plans in accordance with these regulations.

REGULATION 4. Solid Waste Disposal System Feasibility Study:

Whenever any new construction of a solid waste disposal system is contemplated, a solid waste disposal study shall be made and a report of the study submitted by the applicant to the Department. Those items which shall be included in the study are as follows:

A. Background information on the service area. This shall include but may not necessarily be limited to facts about the climate of the area; the general topography of the area; the political entities; the transportation system; the major contributors to the area economy; population density, trends, and projections.

B. A statement of the existing disposal practice in the service area, including type of waste, quantity of waste, methods of processing and disposal presently used, labor and equipment employed, administration of program, and environmental effects of present system.

C. Anticipated future conditions having a direct bearing on the disposal or processing of solid waste.

D. Proposed method or methods to be used in processing and disposal of solid waste including anticipated types and quantity of waste, processing method to be used and justification of alternative selected disposal method to be used and justification of alternative selected, general design criteria, ultimate use of land disposal site, equipment to be used, and administion of the program.

E. Fiscal program for plan implementation including initial capital required, capital budget, and bond or loan amortization if applicable.

F. Maps, exhibits, and studies to show graphically the nature of the proposed project. Proposed site locations, including geological characteristics of the sites reflecting the type soil, depth to rock, and depth to water table, a master plan showing location of soil barings, if required; land use and zoning within a one (1) mile radius of the proposed site; population projections; supporting data; and other pertinent information shall be presented.

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Proposed site locations shall be approved by the Department prior to the initiation of detailed planning and design activities. The date required by the above items will be reviewed, and if sufficient to indicate the scope and intent of the project, the Department will outline general requirements for final approval of the plan.

REGULATION 5. Solid Waste Disposal System Design and Construction:

A. General

No new construction shall be initiated nor shall any major change be made in any solid waste processing facility or disposal facility or site until the plans for such new construction or change have been submitted to and approved by the Department. At least three (3) sets of plans and specifications shall be submitted not less than four (4) weeks prior to the date upon which action by the Department is desired. In the event it is necessary or desirable to make any significant change in the approved plans and specifications, revised plans and specifications, accompanied by a statement of the reasons for the changes shall be submitted to the Department for review and no part of the affected work shall be commenced until the Department has given its written approval.

All work on new construction or changes of existing disposal systems shall be done in conformity with approved plans and specifications. The Department may require reports and make investigations during and following the completion of any construction to determine conformity of the work with the approved plans.

All plans and specifications shall be accompanied by a letter from the local agency having jurisdiction over zoning or from the Tennessee State Planning Commission if no local agency exists stating that the proposed site or facility meets zoning requirements, if such exist, and is consistent with comprehensive community planning if such a plan has been developed.

B. Processing Facility

1. Incinerators

All incinerators shall comply with the Tennessee Air Pollution Control Regulations which implement provisions of the "Tennessee Air Pollution Control Act" (Tennessee Code Annotated Section 53-3408 et seq.) or with local regulations in Davidson, Hamilton, Knox, and Shelby Counties.

The following portion of this section applies to all incinerators having a rated capacity of 1,000 lbs/hr. and greater. Plans and specifications shall be prepared by an engineer licensed to practice in Tennessee and shall contain the following:

a. A master plan for the area lying within a one mile radius of the site. This plan shall be drawn at a scale of not less than 1 in. =400 ft. It shall indicate existing roads, bridges, streams, rail facilities, water impoundments, land use, zoning, topography - 20 ft. contour interval, water and waste water treatment facilities, water supply sources, and other utilities adjacent to or located on the site. It shall show the proposed site, location of proposed site, location of proposed access roads, and major drainage routing.

b. Construction plans and specifications in sufficient detail to indicate the actual construction required.

c. Plans, as required herein, for disposal of incinerator residue.

d. Such other drawings and details as may be required by the Department. Incinerator design and construction shall be such as to produce a facility which will preserve the prescribed quality of the environment and provide for the maintenance of good health and safety of the operators.

2. Composting Plants

Plans and specifications shall be prepared by an engineer licensed to practice in Tennessee and shall contain the following:

a. A master plan for the area lying within a one mile radius of the site. This plan shall be drawn at a scale of not less than 1 in.=400 ft. It shall indicate existing roads, bridges, streams, rail facilities, water impoundments, land use, zoning, topography - 20 ft. contour interval, water and waste water treatment facilities, water supply sources, and other utilities adjacent to or located on the site. It shall show the proposed site, location of proposed access roads, and major drainage routing.

b. Construction plans and specifications in sufficient detail to indicate the actual construction required

c. Plans for use of the composted material.

d. Such other drawings and details as may be required by the Department.

Compost plant design and construction shall be such as to produce a facility which will preserve the prescribed quality of the environment and provide for the maintenance of good health and safety of the operators.

3. Transfer Stations

Plans and specifications should be prepared by an engineer licensed to practice in Tennessee and shall contain the following:

a. A master plan for the area lying within a one mile radius of the site. This plan shall be drawn at a scale of not less than 1 in.=400 ft. It shall indicate existing roads, bridges, streams, rail facilities, water impoundments, land use, zoning, topography - 20 ft. contour interval, water and waste water treatment facilities, water supply sources, and other utilities adjacent to or located on the site. It shall show the proposed access roads and major drainage routing.
b. Construction plans and specifications in sufficient detail to indicate the actual construction required.
c. Such other drawings and details as may be required by the Department.

Transfer station design and construction shall be such as to produce a facility which will preserve the prescribed quality of the environment and provide for the maintenance of good health and safety of the operators.

4. Hazardous Waste Processing and Other Processing Methods

Plans and specifications shall be prepared by an engineer licensed to practice in Tennessee and shall contain the following:

a. A master plan for the area lying within a one mile radius of the site. This plan shall be drawn at a scale of not less than 1 in.=400 ft. It shall indicate existing roads, bridges, streams, rail facilities, water impoundments, land use, zoning, topography - 20 ft. contour interval, water and waste water treatment facilities, water supply sources, and other utilities adjacent to or located on the site. It shall show the proposed site, location of proposed access roads, and major drainage routing.
b. Construction plans and specifications in sufficient detail to indicate the actual construction required.
c. Such other drawings and details as may be required by the Department.

Hazardous waste processing and other processing methods shall be such as to preserve the prescribed quality of the environment and provide for the maintenance of good health and safety of the operators.

C. Disposal Facility or Site

1. General

For land disposal sites serving counties, cities, towns, municipalities, or any combination thereof receiving a quantity qr waste equivalent to that produced by 3,000 people or more, the approved method of disposal shall be the sanitary landfill. For land disposal sites receiving a quantity of waste equivalent to that produced by less than 3,000 people, the approved methods of disposal shall be either the sanitary landfill or the modified landfill. The modified landfill designation signifies provisional approval and each site receiving such designation shall be reviewed annually to determine the advisability of continued approval. For land disposal sites serving industrial and agricultural concerns the approved method of disposal, including items of design, construction, operation, and abandonment shall be approved by the Department for each individual situation.

2. Sanitary Landfill

Those items of design, construction, and operation which define a sanitary landfill are presented in this section and in the section on operation. Plans and specifications should be prepared by an engineer licensed to practice in Tennessee and shall contain but may not necessarily be limited to:

a. A master plan for the area lying within a one mile radius of the site. This plan shall be drawn at a scale of not less than 1 in.=400 ft. It shall indicate existing roads, bridges, streams, rail facilities, water, impoundments, land use, zoning, topography - 20 ft. contour interval, water and waste water treatment facilities, water supply sources, and other utilities adjacent to or located on the site. It shall show the proposed site, location of proposed access roads, and major drainage routing.

b. Detailed construction plans at a scale of not less than 1 in.=100 ft. Plans shall indicate actual plan of operation including existing contours - 5 ft. intervals, structures, drainage area, utilities, fencings, property lines, and proposed structures, drainage and drainage appurtenances; finish contours - 5 ft. intervals, method of developing fill areas, on-site access roads, fencing, sign location or artificial screening, utilities, cross section of typical lift, land use, and conservation plan.

Basic design considerations:

a. *Site Selection*

No site shall be subject to flooding. Geologic conditions shall be such as not to permit pollution of the ground water.

Sufficient soil cover or other material approved by the Department shall be available, preferably at the site, for covering the waste at the required intervals and to the required depth. The site must comply with local zoning requirements and land use planning.

b. *Access Roads*

All-weather roads shall be provided to the disposal site and shall be of such design and construction as to safely accommodate the traffic using the site. On-site roads shall be all-weather or, in lieu thereof, wet-weather disposal areas shall be provided.

c. *Site Drainage*

All surface water shall be diverted around the operations area. Water shall not be allowed to accumulate at any location on the site unless such location has been approved by the Department.

d. *Site Fencing*

Access to the site shall be controlled by means of gates which may be locked and by fencing if such become necessary. All fencing and gates shall be of sufficient height and strength to serve the purpose intended.

e. *On-Site Structures*

There shall be provided on the site a structure for the use of operating personnel. The structure shall be heated and shall provide shelter during inclement weather. At or near the structure there shall be provided sanitary toilet facilities.

f. *Fire Protection*

Fire protection shall be provided for the site. The specific method to be used shall be approved by the Department.

g. *Signs*

There shall be erected at the entrance to the site a sign, clearly legible and visible which shall contain the following:

Name entity served
Emergency phone no.
Fee's charged (if applicable)
Restricted materials (if applicable)
Operating hours
Penalty for unlawful dumping
(if applicable)

h. *Equipment*

The equipment specified shall meet the performance requirements necessary for operating the sanitary landfill in accordance with the operating requirements contained in these regulations. Arrangements for emergency equipment shall be made to allow for operating equipment breakdown.

3. Modified Landfill

Those items of design, construction, and operation which define a modified landfill are presented in this section and in the section on operation. Plans shall be prepared and shall contain the following:

a. A master plan for the area lying within a one mile radius of the site. The scale of this plan shall not be less than 1 in.=2,000 ft. It shall indicate existing roads, bridges, streams, rail facilities, water impoundments, land use, zonings, topography, and any other information required by the Department.

b. Construction plans shall indicate the actual plan of operation which may be a narrative description of site development including proposed fencing, drainage, access roads, sign location, and natural or artificial screening. The geological characteristics of the site shall be determined by the applicant and shall reflect the type soil, depth to rock, and depth to water table.

Basic design considerations:

a. *Site Selection*
No site shall be subject to flooding. Geologic conditions shall be such as not to permit pollution of the ground water. Sufficient soil cover or other material approved by the Department shall be available, preferably at the site, for covering the waste at the required intervals and to the required depth. The site must comply with local zoning requirements and land use planning.
A modified landfill site shall be located not closer than ¼ mile to an occupied dwelling unit.

b. *Access Roads*
All-weather roads shall be provided to the disposal site and shall be of such design and construction as to accommodate safely the traffic using the site.
On-site roads shall be all-weather or, in lieu thereof, wet-weather disposal areas may be provided.

c. *Site Drainage*
All surface water shall be diverted around the operations area. Water shall not be allowed to accumulate at any location on the site unless such location has been approved by the Department.

d. *Site Fencing*
Access to the site shall be controlled by means of gates which may be locked and by fencing if such becomes necessary. All fencing and gates shall be of sufficient height and strength to serve the purpose intended.

e. *Fire Protection*
Fire control plan shall be provided for the site. The specific method to be used shall be approved by the Department.

f. *Signs*
There shall be erected at the entrance to the site a sign, clearly legible and visible which shall contain the following:

name of entity served
Emergency phone no.
Fee's charge (if applicable)
Restricted material (if applicable)
Operating hours
Penalty for unlawful dumping
(if applicable)

g. *Equipment*
The equipment specified shall meet the performance requirements necessary for operating the modified landfill in accordance with operating requirements contained in these regulations. Arrangements for emergency equipment shall be made to allow for operating equipment breakdown.

REGULATION 6. Solid Waste Disposal System Operation:

A. General

The operation and maintenance of all solid waste disposal systems shall be such as not to endanger the public health or safety, not to adversely affect the quality of the environment and to provide for the proper processing and disposal of solid waste.

B. Processing Facility

1. Incinerators

Incinerator operation shall be such that the requirements of the Tennessee Air Pollution and local control regulations are met.

a. *Access to Site*
Access to the incinerator shall be limited to the hours in which authorized operating personnel are on duty at the site.

b. *Site Storage*
All solid waste disposed of at the site shall be confined to the designated dumping area. Storage of the waste at the site shall be kept to a minimum.

c. *Supervision of Operation*
An incinerator shall be operated under the supervision of a responsible individual who is thoroughly familiar with the operating procedures established by the designer.

d. *Incinerator Residue*
An incinerator shall be so operated that the residue produced will contain little or no conbustible or organic

material. All incinerator residue shall be disposed of in a sanitary manner.

2. Composting Plants

a. *Access to Site*
Access to the composting plant shall be limited to the hours, in which authorized operating personnel are on duty at the site.

b. *Site Storage*
All solid waste disposed of at the site shall be confined to the designated dumping area. Storage of the waste at the site shall be kept to a minimum

c. *Supervision of Operation*
A composting plant shall be operated under the supervision of a responsible individual who is thoroughly familiar with the operating procedures established by the designer.

d. *Nongradable Solid Waste*
Solid waste which is not degradable by compost methods and is a resulting by-product of a composting plant shall be disposed of in a sanitary manner.

e. *Use of Composted Solid Waste*
Composted solid waste offered for use by the general public shall contain no pathogenic organisms, shall be innocuous, shall be nuisance free, and shall not endanger the public health or safety.

3. Transfer Stations, Hazardous Waste Processing Plants, and Other Processing Methods

Operation of transfer stations, hazardour waste processing plants, or other processing methods shall be such that the intended function of the facility will be best served, that the public health and safety will not be endangered, and that nuisances will not be created. Specific operating procedures for each installation shall be approved by the Department prior to initiation of operation.

C. Disposal Facilities and Sites

1. Sanitary Landfill

a. *Access to Site*
Access to the sanitary landfill site shall be limited to the hours in which authorized personnel are on duty at the site. A container shall be provided for after hours usage at the entrance of the site.

b. *Unloading of Waste*
The unloading of the solid waste shall be controlled and restricted to an area such that the material can easily be incorporated into the working face with the available equipment.

c. *Blowing Litter*
Blowing litter shall be controlled. The entire sanitary landfill shall be kept free of litter, and unloading shall be performed so as to minimize scattering of the solid waste.

d. *Spreading and Compacting of Waste*
Solid waste shall be spread in layers of approximately two (2) feet depth prior to compaction.

e. *Daily Cover*
At least six (6) inches of compacted cover material shall be placed on all exposed solid waste by the end of each working day.

f. *Intermediate Cover*
In all but the final lift of a sanitary landfill twelve (12) inches of compacted cover material shall be placed on all surfaces which will be left exposed for a period of over one month.

g. *Final Cover*
A depth of at least twenty-four (24) inches of compacted cover material shall be placed on the fill not later than one (1) week after the final lift is completed.

h. *Open Burning*
No garbage or refuse containing garbage shall be burned at the sanitary landfill site. Open burning of tree limbs, brush, excelsior, dunnage, and other items of comparable combustion characteristics may be performed but shall comply with requirements of the Tennessee Air Pollution Control Regulations or local regulations.

i. *Salvage Operations*
Salvaging shall not be permitted at the working face of a landfill site or at any place within a site that interferes with prompt sanitary disposal of solid waste. Salvaging when performed shall be such that no hazard to the public health or safety shall be created.

Before any salvage operation is begun approval of the operation shall be made by the Department.

j. *Handling of Special Wastes*
Dead animals, sewage solids or liquids, and other materials which are either hazardous or hard to manage shall be disposed of in a sanitary landfill only if special provisions are made for such disposal and are approved by the Department.

k. *Vector Control*
Conditions unfavorable for the production of insects and rodents shall be maintained by carrying out routine sanitary landfilling operations promptly in a systematic manner. Supplemental vector control measures shall be instituted whenever necessary.

l. *Dust Control*
Dust control measures shall be taken at a landfill site to prevent dust from creating a nuisance or safety hazard to adjacent landowners, or to people engaged in supervising, operating and using the site.

m. *Supervision of Operation*
A sanitary landfill shall be operated under the supervision of a responsible individual who is thoroughly familiar with the operating procedures for the specific landfill under consideration.

n. *Domestic Animals*
Domestic animals shall be excluded from the site.

o. *Records and Reports*
The Department shall require such records and reports necessary to assist it in fulfilling the requirements of these regulations.

p. *Contamination Control*
There shall be no contamination of ground or surface waters resulting from deposited solid wastes or their products of decomposition, nor hazard or nuisance caused by gases or other products generated by the biologically or chemically active wastes.

q. *Accident Prevention and Safety*
Employees shall be instructed in the principles of first aid and safety and in the specific operational procedures necessary to prevent accidents. Accident precautionary measures shall be employed at the site. An adequate stock of first-aid supplies shall be maintained at the site.

r. *Drainage and Grading*
The entire site shall be graded and/or provided with drainage facilities to minimize run-off onto the sanitary landfill, to prevent the erosion of earth cover, and to drain rain water falling on the surface of the sanitary landfill. The final surface of the sanitary landfill shall be graded to drain, but no surface slope shall be so steep as to cause erosion of the cover. The surface drainage shall be consistent with the surrounding area and shall in no way adversely affect proper drainage from these adjacent lands.

s. *Completion of the Sanitary Landfill*
An inspection of the entire site shall be made by a representative of the Department before the site is abandoned. Any corrective work shall be performed before the project is accepted. Arrangements satisfactory to the Department shall be made for repair of all cracked, eroded, and uneven areas in the final cover during the year following completion of the fill. Upon completion all sites shall be recorded with the register of deeds as a former landfill site.

2. **Modified Landfill**

a. *Access to Site*
Access to the modified landfill area shall be controlled by means of one opening to the site to be used both as entrance and exit.

b. *Signs*
Sufficient signs shall be present to direct users to unloading area.

c. *Unloading of Waste*
The unloading of the solid waste shall be controlled and restricted to a previously excavated receiving trench. The trench shall be so excavated that surface water will not accumulate. The trench shall be constructed of such dimensions to adequately contain at least all waste deposited in a one-week period. Graveling or any equivalent all-weather surface shall be placed adjacent to the unloading trench so that several vehicles may maneuver and unload simultaneously. An unloading bumper of sufficient size should be placed

parallel to the unloading side of the trench and close enough so that the trench will receive all discharged refuse.

d. *Blowing Litter*
Blowing litter shall be controlled. The entire modified landfill site shall be kept free of litter, and unloading shall be performed so as to minimize scattering of solid waste.

e. *Spreading and Compaction of Waste*
Solid waste shall be spread in layers of approximately two (2) feet depth prior to compaction.

f. *Weekly or Twice Weekly Cover*
At least six (6) inches of compacted cover material shall be placed on all exposed solid waste. Sites receiving a quantity of waste equivalent to that produced by less than 1,500 people shall cover at weekly intervals. Sites receiving a quantity of waste equivalent to that produced by less than 3,000 but more than 1,500 people shall cover at not more than 4 day intervals.

g. *Final Cover*
A depth of twenty-four (24) inches of compacted cover material shall be placed on the fill not later than 1 week after the final lift is completed.

h. *Open Burning*
No open burning shall be permitted.

i. *Handling of Special Wastes*
Dead animals, sewage solids or liquids, and other materials which are either hazardous or hard to manage shall be disposed of in a modified landfill only if special provisions are made for such disposal and are approved by the Department.

j. *Vector Control*
Vector control measures shall be instituted whenever necessary.

k. *Completion of the Modified Landfill Site*
An inspection of the entire site shall be made by a representative of the Department before the site is abandoned. Any corrective work shall be performed before the project is accepted. Arrangements satisfactory to the Department shall be made for repair of all cracked, eroded, and uneven areas in the final cover during the year following completion of the fill. Upon completion all sites shall be recorded with the register of deeds as a former landfill site.

3. **Conversion or Avandonment of Open Dumping**

The following steps shall be followed when sites are abandoned or converted to sanitary landfills or modified landfills.

a. When converting, prepare construction plans for landfill operation of site in accordance with provisions of these regulations.

b. If a site is to be abandoned, submit plans, as required by these regulations, showing condition of site upon completion.

c. Fence or otherwise restrict unauthorized access.

d. Place necessary informational signs.

e. Close site to incoming refuse or establish a specific spot on the site for sanitary or modified landfill operation during closing.

f. Extinguish fires, except as herein stated.

g. Control vectors - Bait site not later than one week following final load of solid waste. Compact and cover sites not more than one week following baiting.

h. Provide drainage of the entire site.

i. Compact and cover with earth in accordance with provisions of these regulations.

REGULATION 7. Waiver

One or more of the provisions in the above regulations may be waived in whole or in part when, in the opinion of the Commissioner, there are factors or circumstances which render compliance with such provision(s) unnecessary: *Privided,* That, such provisions shall be specifically exempt in writing by the Commissioner.

* * *

Approved January 19, 1971
David M. Pack, Attorney General

Filed January 20, 1971
Joe C. Carr, Secretary of State

This 12th day of January, 1971

Eugene W. Fowinkle, M.D.
Commissioner
Tennessee Department of Public Health

APPENDIX B

UNION CONTRACT

MEMORANDUM OF UNDERSTANDING
BETWEEN
CITY OF MEMPHIS, TENNESSEE
AND
LOCAL 1733
AMERICAN FEDERATION OF
STATE, COUNTY, AND MUNICIPAL EMPLOYEES
A.F.L. - C.I.O.

SANITATION SERVICES DIVISION

PREAMBLE

This Agreement is entered into by the City of Memphis, Tennessee, hereinafter referred to as the City or Employer, and Local 1733, American Federation of State, County and Municipal Employees, AFL-CIO, hereinafter referred to as the Union.

It is the purpose of this Memorandum of Understanding to promote harmonious relations, cooperation, and understanding between the City, the Union and the employees covered hereby, to insure the well-being of said employees and the efficient and economical operation of the departments in which they are employed, to establish and maintain a basic understanding relative to personnel policies, practices, and procedures involving wages, hours, and other conditions of employment, and to provide means for amicable discussion and adjustment of matters of mutual interest.

ARTICLE I
RECOGNITION

The City of Memphis recognizes the American Federation of State, County and Municipal Employees, AFL-CIO, Local 1733 as the acknowledged bargaining agent for certain non-supervisory employees in the Sanitation Services Division for the purpose of negotiating wages, hours, and other conditions of employment to the full extent provided by the applicable laws of the City of Memphis, the State of Tennessee and the City Council Labor Policy.

The City grants exclusive recognition to the Union in accordance with the City Council Labor Policy which provides that no other labor organization shall be recognized unless they be designated by a majority of the non-supervisory employees of the appropriate unit.

The term "certain non-supervisory employees" shall include those employees employed in the job classifications as identified in the wage schedule included in this Memorandum. The term "non-supervisory" shall exclude district supervisor, division supervisor, sub-station manager, superintendent and division director, all of whom have the authority to hire and fire, discipline, transfer or assign or to effectively recommend such action. It is not the intention of this clause to delete any position from the bargaining unit which is now included

ARTICLE II

MANAGEMENT RIGHTS

The City of Memphis has the exclusive right to determine the purpose of each of its agencies and to set the standards of services to be offered to its citizens.

It is also the right of the City to direct its employees, to hire, promote, demote, transfer, assign or retain employees in positions within an agency or department; and to establish reasonable work rules which do not conflict with this Agreement. However, any work rule change that affects an established system shall be discussed with the Union in advance of change. The City also has the right to suspend, discharge or take other appropriate disciplinary action against its employees for just cause and in accordance with the provisions of the Memorandum of Understanding, or other applicable ordinances and statutes; and to relieve its employees from duty in the event of lack of work, funds or for legitimate reasons; provided, however, that nothing contained in this Article shall be deemed to deny the right of any employee to submit a grievance concerning the application or interpretation of the terms of this Memorandum of Understanding or a claimed violation, misinterpretation or misapplication of the rules, or regulations of the City affecting the terms and conditions of employment.

All rights and duties of both parties are specifically expressed in this Memorandum of Understanding, and each of the parties reserves to itself the rights and privileges otherwise accorded it, whether by Charter, statute, or common law, with respect to any matters not expressly covered by this Memorandum of Understanding.

ARTICLE III

GENERAL PROVISIONS AND EMPLOYEES' RIGHTS

Section 1. The Union and City agrees that no employee shall be discriminated against or discharged because of Union membership, sex, marital status, race, religion, creed, national origin, political affiliation, or for exercising the use of the grievance procedure.

"Employee" as used in this Agreement or use of the male gender in this Agreement shall be construed as including female.

Section 2. Nothing in this Memorandum of Understanding can be construed to require an employee to join the Union or any other employee organization. The Union and Management shall not coerce any employee in the exercise of his rights to join or not to join the Union. The City, its supervisors, or any other person in authority shall not coerce, intimidate or in any other manner discriminate against any employee who exercises his right to join or continue membership in the Union. No employee shall be denied promotion or any other benefit because of his membership in the Union.

Section 3. The employer will not engage in aiding, encouraging, supporting, and assisting in any way any other union, employee group or organization within the bargaining unit; nor hold employee meetings in the bargaining unit which exclude union members.

ARTICLE IV

UNION STEWARDS AND UNION REPRESENTATION

Section 1. The City recognizes and shall deal with all of the accredited union stewards, appropriate union Chapter Chairman, Local President, and representatives of the American Federation of State, County, and Municipal Employees, whether local union representatives, district council representatives, or international representatives.

Section 2. Union staff representatives shall be admitted to the building and grounds of the City during working hours for the purpose of assisting in the adjustments of grievances, and the conducting of other union business; except union solicitation and union meetings, or any union activities which would disrupt the normal work schedule. Any union meetings with all the employees assigned to the particular area called by the union representatives or Chapter Chairman may be held on City property during working hours upon prior request to the Division Director or his designee, which permission shall not be unreasonably withheld.

Section 3. A written list of union stewards and Chapter Officers shall be furnished to the City Personnel Director within ten (10) days after their designation and the union shall notify the City Personnel Director within five (5) days of such union stewards or changes thereof.

Section 4. The appropriate union steward within the area and/or the appropriate Chapter Chairman shall be granted reasonable time off, without loss of pay, during working hours to investigate potential grievances, accidents, and settle complaints which have not become formal grievances, upon giving notice and receiving approval of supervisor, which approval shall not be unreasonably withheld. Once a grievance has been filed at Step 1, the union steward, Chief Steward and Chapter Chairman will be granted reasonable time off without loss of pay during working hours only at the appropriate step specified for each named position in the grievance procedure.

Section 5. If an employee has to come in when he is not scheduled to work in order to attend the grievance meeting, or arbitration hearing, he shall be paid for such times or be given compensatory time off. The City will make every effort to comply with the employee's request regarding pay or time off.

Section 6. The City will provide an office area whenever available for the use of the Chapter Chairman. The City will provide an office area with a desk and chairs for the local President. It is not intended that his full work day would be spent in the office.

ARTICLE V
GRIEVANCE AND ARBITRATION PROCEDURE

Any grievance, defined as a dispute between the City or any representative of the City and any employee or group of employees covered by this Agreement over the application, meaning, or interpretation of this Memorandum of Understanding, shall be handled in a simple and direct manner as follows:

Step 1. The Union steward, with the aggrieved employee shall discuss the grievance with the District Supervisor within ten (10) days of the date of the grievance or the employee's knowledge of its occurence. The District Supervisor shall attempt to adjust the dispute and shall respond to the Union steward within three (3) working days.

Step 2. If not resolved at Step 1, the grievance shall be reduced to writing, indicating the specific article allegedly violated, and a brief description of the grievance, within fifteen (15) days of the date of the grievance or the employee's knowledge of its occurence or within five (5) working days of the District Supervisor's response, whichever is longer. The Division Supervisor or sub-station manager shall discuss the matter upon receipt of the written grievance from the union with the Chief Steward, the steward and the agrieved employee. If the Division Supervisor or the sub-station manager fails to respond within five (5) working days, the grievance shall be considered upheld in favor of the employee and shall be implemented.

Step 3. The Union shall deliver to the Division Director within five (5) working days, its acceptance or rejection on the grievance form, of the answer at Step 2. If appealed, the Division Director will conduct a thorough discussion with the aggrieved employee, the Chapter Chairman, and the union staff representative; and shall deliver to the Chapter Chairman, his answer within five (5) working days, following receipt of the appeal.

If the Division Director fails to respond within five (5) working days, the grievance shall be considered upheld in favor of the employee and shall be implemented.

Step 4. The Union shall then review the answer of the Division Director and indicate in writing its acceptance or its rejection and request for arbitration, if desired, within fifteen (15) working days after the rendering of the Division Director's written decision, unless extended by mutual agreement.

The decision of the Division Director shall be mailed certified mail to the Union office, return receipt requested, for the purpose of establishing the fifteen (15) day period. The Union, in submitting its request for arbitration, as provided hereafter, shall send said request, certified mail, to the Mayor, with a copy by regular mail to the City Attorney. Failure of the Union to request arbitration within the time allotted or extended, shall be considered acceptance of the decision; and the answer of the Division Director shall be considered satisfactory. It is understood that the Local Union President may be involved at both Step 3 and 4. The Union shall have the right to take up suspensions and/or discharges within ten (10) working days at Step 3 of the grievance procedure, and the matter shall be handled in accordance with this procedure through the arbitration step if deemed necessary by the union.

ARBITRATION PROCEDURES

The arbitration panel shall have access to all written statements and documents pertaining to the appeals in the grievance, but the panel shall have no power to amend, revise, add to, nor subtract from, nor modify any terms of this Memorandum of Understanding, and they shall be strictly limited to the interpretation or application of the express provisions of this Memorandum of Understanding, and any other Memorandum made supplementary thereto.

Selection of the Arbitration Panel. The City shall select one member of the panel and the Union shall select the other member of the panel. The third member of the panel, who shall be Chairman, shall be jointly selected by the appointees of the Union and the City.

If, within five (5) days after the request for arbitration is made, the Union and City panelists fail to agree upon the appointment of a third member of the panel, a request will be made to the American Arbitration Association or the Federal Mediation and Conciliation Service for a list of five arbitrators. The Union and City panelists may select one of the list of arbitrators or if they still cannot agree, the following procedures shall be followed as stated below:

The party presenting the grievance shall be given the first opportunity to strike the name of one of the arbitrators contained in said list. The other party may then proceed to strike a name, and this procedure shall continue until one arbitrator's name remains. The arbitrator whose name remains shall be designated as the third member of the arbitrationpanel. In the event the arbitrator designated declines to act, the procedure of striking names will be reinstated until an arbitrator willing to act has been selected.

The Chairman of the arbitration panel shall hold a hearing within ten (10) working days after receipt of the request to arbitrate. The arbitration decision shall be in writing and shall set forth the panel's finding of facts, opinion and conclusion on the issues submitted.

The panel shall be without power to make decisions contrary to or inconsistent with or modifying or varying in any way the applicable laws or rules and regulations having the force and effect of law. The cost of the services of the Chairman of the arbitration panel shall be shared equally by both parties but the cost of the services of the other members of the panel shall be borne by the selecting party.

The arbitration panel shall render its decision based upon majority vote not later than thirty (30) calendar days after the conclusion of the final hearings.

There shall be final and binding arbitration on suspension and discharge of an employee with the arbitrator chosen as above. The arbitrator shall have the power to rule on such disputes involving suspension or discharge under this agreement provided that he shall have no power to add to, or subtract from or modify any terms of this agreement, or any other agreements made supplementary hereto. The costs shall be shared as above for advisory arbitration. It is further agreed that the parties shall abide by such arbitrator's decision unless the court shall determine that the decision of such arbitrator usurps the authority and responsibility solely vested in the City as established by the Charter of the City of Memphis and the laws of the State of Tennessee. All other decisions shall be reported to the Chief Administrative Officer of the City of Memphis and to the Union and shall be a matter of public record, and shall be advisory to the Chief Administrative Officer who is hereby designated by the Mayor to render a final binding decision.

The failure of the appropriate union representative to respond as required in any of the steps within the time provided, shall be considered as acceptance of the City's answer; just as the failure to respond by the City to the Union shall be considered as upholding the grievance.

ARTICLE VI
DISCIPLINE AND DISCHARGE

Disciplinary action or measures shall involve only the following progressive measures, except violations of major infractions where progressive steps may or may not be followed:

(A) Oral reprimand
(B) Written reprimand
(C) Suspension not to exceed ten (10) days (notice to be given in writing)
(D) Discharge

A formal oral reprimand may be given to an employee but must be given in the presence of a steward, and the first formal oral reprimand will become a part of employee's record.

The employer shall not discharge any employee without just cause. In any case involving discharge, the employee may contest the discharge and may elect to use the grievance procedure.

The employee, his steward and the Union will be notified in writing that the employee has been suspended and is subject to discharge. The notice should set forth the reasons for the disciplinary action. Notice to the employee and Union will satisfy technical complaints.

Any employee found to be unjustly suspended or discharged shall be reinstated with full restoration of his rights and conditions of employment including seniority. Any grievance decision which directs compensation for time lost shall be made less temporary earnings during said period.

No material placed in the employee's personnel folder, including any evaluation of the employee, shall be used to discipline the employee unless a true copy is first given to the employee.

ARTICLE VII
HOLIDAYS

The following days shall be recognized and observed as paid holidays during the term of this Memorandum of Understanding.

New Year's Day - January 1st
Memorial Day - Last Monday in May
Independence Day - July 4th
Labor Day - First Monday in September
Thanksgiving Day - 4th Thursday in November
Friday after Thanksgiving
Christmas Eve - December 24th
Christmas Day - December 25th
Good Friday - 1974, Friday before Easter

Employees who are assigned to work on a given holiday shall receive either a compensatory day off to be later scheduled by mutual agreement or the City will pay the employee an additional eight (8) hours pay for having worked the holiday.

Whenever any of the above holidays falls on either Saturday or Sunday, either the preceding Friday or the following Monday shall be observed as the holiday. Employees will be notified as far in advance as possible concerning the day to be observed as the holiday. If the holiday falls on the employee's regular day off, the employee will be given another compensatory day for that holiday. If the holiday falls during the employee's scheduled vacation, additional time (or an additional day's pay) will be granted.

Holiday pay will not be allowed if the employee did not work and was not excused the last scheduled workday before and the next scheduled workday after the holiday.

ARTICLE VIII
VACATIONS

Employees shall be granted an annual paid vacation in accordance with the following schedule based on length of continuous service:

Service Requirement	Vacation Period
6 mons., but less than 1 yr.	1 wk, (40 hrs.)
1 yr., but less than 10 yrs.	2 wks. (80 hrs.)
10 yrs., but less than 15 yrs.	3 wks, (120 hrs.)
15 yrs., but less than 25 yrs.	4 wks, (160 hrs.)
25 yrs. and over	5 wks, (200 hrs.)

The rate of vacation pay shall be the employee's regular straight time rate of pay in effect for the employee's regular job on the pay day immediately preceding the employee's vacation period.

Upon request submitted no less than four (4) days in advance of the start of his vacation, an employee shall receive his vacation pay no later than one (1) day prior to the start of his vacation.

Vacations will be granted, as far as possible, in accordance with employee preference and in line of departmental seniority, but the number of employees off on vacation in a given week shall be determined by the City to assure orderly operation of the respective Divisions and Departments. However, when a dispute arises between employees in the same classification, the City shall allow the senior employee to have first choice. There shall be a posted vacation schedule no later than January 1st each year in order to permit employees to express thier choice of vacation by April 1st, and the list shall contain the number of employees who can go on vacations and the employee's anniversary date. Employees who wish to split their vacation should indicate their choice on the vacation schedule. Vacation approval shall be posted no later than April 30th.

ARTICLE IX
SICK LEAVE

Upon completion of three (3) months of consecutive service after initial employment, all permanent, full time employees shall be eligible to receive pay while absent from work due to sickness to be charged against accumulated sick leave time.

Unlimited accumulation of sick leave begins from the first day of employment at the following rates;

1. One (1) day for each month of service during the first five years of service
2. One and one-half (1½) days for each month of service for the sixth (6th) year through the ninth (9th) year of service.
3. Two (2) days for each month of service from the tenth (10th) through the fourteenth (14th) year of service.
4. Two and one-half (2½) days for each month of service from the fifteenth (15th) year and thereafter.

Sick leave will not accumulate while an employee is absent on sick leave fifteen (15) days or longer, unauthorized absence, or during other leaves of absence, except military leave and/or officially granted educational leave.

Pay for holidays that occur while an employee is on sick leave shall not be charged as sick leave.

Employees shall be compensated in cash for accumulated unused sick leave when they retire, but not to exceed forty-five (45) days the first year of this Agreement, fifty-five (55) days the second year, and sixty-five (65) days the third year. The amount of payment for unused sick leave is to be calculated at the employee's rate of pay in effect on the pay day immediately preceeding the employee's retirement. Such payment shall not be counted as compensation for the purpose of computing retirement benefits.

After completion of three (3) months of service, an employee who works four (4) consecutive months without sick leave, or any unauthorized absence, will be eligible for one (1) bonus day leave with pay, to be taken off within twelve (12) months from the day it is earned. Bonus days will be earned in a like manner for subsequent four (4) month periods so that an employee may earn up to three (3) bonus days a year.

ARTICLE X
LEAVES OF ABSENCE

LEAVES OF ABSENCE WITHOUT PAY MAY BE GRANTED TO PERMANENT EMPLOYEES FOR THE FOLLOWING REASONS:

Section 1.

Military. Any permanent full-time employee who shall enter the armed forces of the United States will be restored to his former position or one of an equivalent status upon presentation of an honorable discharge from the Armed Forces within ninety (90) days from the date of discharge.

Reinstatement from military leave of absence shall be subject to the ability to pass the required physical examination. If the veteran is not qualified to perform the duties of his former position because of a service-incurred disability, he will be placed in the nearest similar job for which he is qualified.

Section 2.

Educational. Permanent full-time employees shall be eligible to receive a leave of absence which does not exceed one full year for the purpose of furthering education. Such educational leaves should be determined upon recommendation of the Department Head and with the approval of the Division Director. Such educational leave may be extended for an additional one (1) year upon written request by the employee and upon recommendation of the Department Head and with the approval of the Division Director.

Tuition Refund Program. The City will provide a tuition program to be available to all employees covered by this Memorandum. To be eligible for benefits in this article, employees must enroll in an adult education program conducted by an accredited learning institution. To be eligible for tuition refund, the course or courses to be taken must be recommended by the Division Director and approved in advance by the Director of Personnel.

The reimbursement plan will pay the cost of tuition and books upon successful (C Average or above) completion of the course, provided, however, that benefits provided by the Veterans Educational Benefits Act shall not be duplicated by the provisions of this article.

Pay for City related education leave will be subject for further negotiations pending study, analysis and recommendations of the Joint Committee referred to in Article 33 of this Agreement.

Section 3.

Personal. Permanent full-time employees with at least three (3) months of continuous service with the City will be eligible to receive leaves of absences for such personal reasons as marriage, illness of a member of the family, disposal of a family estate, funeral for other than immediate family, or other emergencies for a period not to exceed thirty (30) days upon recommendation of the Department Head and with the approval of the Division Director. Such approval shall not be unreasonably withheld.

Section 4.

Sickness. Permanent full-time employees with at least three (3) months continuous service with the City will be eligible for a leave of absence not to exceed six (6) months with an extension up to six (6) months after the exhaustion of the employee's paid sick leave because of the prolonged illness of the employee. The request for such leave of absence or extension shall contain the recommendation of the physician and the leave shall be granted by the Division Director.

Section 5.

Union Business. Union employees elected to any office and selected by the Union to do work which takes them from their employment with the employer shall at the written request of the Union be granted a leave of absence (not to exceed twenty-five (25) employees). The leave of absence shall not exceed one (1) year, but it shall be renewed or extended for a similar period at any time upon the request of the Union. By mutual Agreement, short term leave of absence, not to exceed five (5) days, may be granted for more than twenty-five (25) employees.

Section 6.

Maternity. Employees with at least three (3) months of continuous service shall be entitled to maternity leave of absence without pay as follows:

> The employee must notify her supervisor by the fifth month of pregnancy and such notification shall include a written statement from her physician specifying the approximate date of birth. Maternity leave may begin on the date advised by the doctor and shall not extend beyond three (3) months after the date of birth. An extension for up to additional three (3) months shall be granted upon the recommendation of the employee's physician. The employee shall be reinstated and an attempt will be made to return the employee to her former position.

ARTICLE XI
DEATH IN FAMILY

In the event of a death in the employees' immediate family, full wages will be paid for scheduled days of work from which the employee is necessarily absent because of the death, but not beyond a maximum of three (3) days. Immediate family includes husband, wife, mother, father, brother, sister, son, daughter, mother-in-law, father-in-law, grandmother, grandfather, grandchildren and properly established foster parents (employee would have to live in household). Additional time may be granted as leave without pay or as paid vacation when justified by circumstances.

Employees will be given one (1) day off with pay if funeral is on work day for grandparents-in-law, brother or sister-in-law, son or daughter-in-law.

ARTICLE XII
DEATH OF AN EMPLOYEE

In the event of the death of a regular permanent employee, while employed by the City of Memphis, accumulated sick days up to 45 days first year of this Agreement, up to 55 days second year and up to 65 days the third year of this Agreement, all accrued wages due, including allowances for unpaid holidays and vacation time in addition to $1,000 free insurance for the first fifteen years of service and after fifteen years of service employee's beneficiary will receive $2,000 to be paid to the person entitled thereto as designated by the employee, or by law.

In addition, the person entitled as designated by law will receive an amount equivalent to the employee's regular wages for one (1) month after the legally required deductions.

ARTICLE XIII
SENIORITY

SECTION 1. Seniority shall be granted to all employees. Seniority shall be determined on the basis of actual length of continuous service from the latest date of permanent employment with the City.

All new employees shall be considered probationary for three (3) months from their last date of hire. During such probationary period, employees may be discharged without constituting a breach of this Memorandum, except as provided in the non-discrimination clause. At the end of their probationary period, employees shall be placed on the seniority list, as of their first day of last employment.

SECTION 2. An employee shall lose seniority for the following reasons;

A. Quits job on or after July 1, 1972.
B. Discharge for a just cause.
C. Is absent for three (3) consecutive working days, or five (5) consecutive working days in the event the employee is detained by a law enforcement agency, without notifying his Supervisor.

D. Is laid off for one (1) year.

E. Fails to report to work on the first working day after the xxpiration of vacation, or authorized leave of absence, unless notification is given according to Sub-Section C above.

F. Fails to notify the City within ten (10) working days of the date the Recall Letter is mailed, stating whether or not the employee intends to report for work after the lay-off. A copy of the Recall Letter will be sent to the Union Office.

SECTION 3. Lay-off shall begin with those employees having the least seniority. Employees shall be recalled according to seniority in the inverse order of lay-off.

In case of reduction of the force or elimination of a position, lay-off will be made by first laying off probationary employees in a classification in the appropriate Division. Further reductions will be made by laying off the least senior employees in the affected classification in the appropriate Division. Such employees may bump employees with less seniority in lower classification in the same Division, provided the employees are qualified to perform the work involved, and shall be paid the rate of the classification to which he bumps.

Whenever the Division has a vacancy in any of the classifications listed herein and other City Divisions have employees to be laid off, or laid off, the Division will give first preference to employ or recall laid off employees who can perform the work involved.

The City will make every reasonable effort to secure employment both within City Government or within other local government agencies for any laid off employees.

SECTION 4. The employer may make temporary transfers or assignments, or re-assign employees to positions other than those they normally perform, in order to meet the requirements of the operation of the Department.

If the transfer or assignment is to a higher paid classification, the highest senior qualified available employee at a work location must be given first choice for the position. If such temporary vacancy continues for the next day or more, it will be filled by the highest senior qualified employee at the reporting location.

If the transfer or assignment is to an undersirable position, such assignment will be rotated among employees in inverse order of seniority at the work location.

Any employees temporarily transferred, assigned, or re-assigned shall be paid either his rate of pay or the rate of the employee he replaces, whichever is highest, from the first hour when such transfer is for three (3) hours or more.

Temporary transfers shall be for a period of no longer than thirty (30) working days. Any position that requires more than thirty (30) working days of temporary transfer, shall be considered an open position and be posted.

SECTION 5. Notice of all vacancies and/or new jobs shall be posted for all personnel on all employee bulletin boards, and copies sent to the Chapter Chairman and Local Union President within three (3) days following the decision to fill the vacancy or establishment of a new job. Employees make application within ten (10) days, at the Area Location Office or City Personnel Office. Bid notices will be posted within twenty-four (24) hours of the date typed on said notice; and shall remain posted for the ten (10) day period. The City will make every effort to fill the vacancy within five (5) days after the ten (10) day application period; if unable to do so, shall notify the Union in writing stating the reason.

SECTION 6. The permanent filling of any vacancy shall be on the basis of seniority from among the employees qualified, and subject to re-opening for consideration of those employees who were at the time of posting, on sick leave or military training leave not to exceed thirty (30) days, or on vacation. Said employees shall make application for the position within three (3) working days after returning to work.

Employees who are promoted shall have up to ninety (90) days in which to prove by performance that they can do the work. If an employee does not prove by performance that he can do the work according to the job requirements within ninety (90) days, the employee will be returned to his former position.

SECTION 7. The agreed to seniority list shall be provided by the employer on request, in accordance to division, districts, and/or departments and by classification. Personnel records shall be available during working hours to the employee and/or his designated Union representative. Authorization for a Union Representative to see an employee's personnel file without the presence of the employee shall be made in writing by the employee, specifying the information desired.

SECTION 8. When advancement opportunities occur, they shall be filled in accordance with seniority of qualified personnel by giving preference first to employees in the same classification who wish to transfer to the vacant position at the available work location. The City will provide Transfer Request Forms, for all employees and whenever an employee wishes to request a transfer to a different work location within the Division, within the same classification, he shall complete the Transfer Request Form, and forward it to the City Personnel Office. In this manner, the City will first review the transfer request, and give first preference to any requesting employee who wishes to change work locations. If no employee wishes to transfer to the open position, the City will next give preference to employees in lower classifications within the Division, and finally City-wide from among those employees who bid.

In the event that vacancies can not be filled in accordance with the above provisions, the vacancies shall be filled by other means.

Section 9. Bidding down for positions can only be done at the employee's option, when there is a vacancy.

SECTION 10. The officers and stewards designated in writing, by the Union, shall have the highest seniority in their respective areas for lay-offs, recalls, and transfer purposes only during their tenure of office.

ARTICLE XIV
HOURS OF WORK

Eight (8) consecutive hours of work within a twenty-four (24) hour day shall constitute a normal work shift and a normal schedule of work for full time employees shall be forty (40) hours per week provided that the work incentive plan for refuse collection crews by collection district shall continue which permit collection crews to be released upon the completion of their tour assignment of the entire district. When an employee's normal schedule of work or reporting time is changed, notice of such change shall be posted one (1) week in advance. All employees shall be granted a thirty (30) minute paid meal period during each work shift and two (2) fifteen (15) minute paid rest periods during each shift. The meal period shall be scheduled during the middle of each work shift. One rest period shall be during each one half (½) shift. The rest period is intended to be a recess to be preceded and followed by a work period. Consequently, it may not be used to allow late arrival or early departure or to extend the lunch period.

ARTICLE XV
REPORTING, CALL BACK AND STANDBY PAY

SECTION 1.

Reporting Pay. Any employee who is scheduled to report for work and who presents himself for work as scheduled shall be assigned at least four (4) hours work.

When an employee reports for work as scheduled, and is excused from duty before completing four (4) hours work, the employee shall be paid at his regular rate for four (4) hours work.

In case of snow, ice conditions, rain, storms or tornadoes, or temperature of 8 degrees F and under, employees who reported on schedule shall be assigned four (4) hours work inside or excused from duty with four (4) hours pay, except in cases of emergency or when required to maintain or restore service to citizens. Emergency is understood to mean those cases that could not be foreseen or postponed including, but not limited to crews required for snow or ice control or removal, flood control, sewage or drain overflow control, removal of trees felled by ice or snow, or similar events. When such work is required, during such weather, the City shall provide all necessary rain wear.

SECTION2.

Call Back Pay. Any employee or employees who are called to report for work prior to their regularly scheduled time or any employee who completes his regular shift and is then called back to perform a task will be guaranteed a minimum of four (4) hours pay. No employee shall be allowed nor required to work more than sixteen (16) hours in a twenty-four (24) hour period.

SECTION 3.

Stand-By-Pay. Any employee required to stand by at home or any designated area other than his reporting location shall be compensated two (2) hours pay for each eight (8) hours he is required to stand by. Employees required to stand by shall have written authorization of his supervisor.

ARTICLE XVI
HEALTH, SAFETY AND SANITARY CONDITIONS

The employer will maintain adequate safety and sanitary conditions at all times. In order to correct, maintain and improve effective safety and sanitary conditions, a joint committee entitled, "Health and Safety Committee" shall be composed of three (3) people appointed by the Union and three (3) people appointed by the City. The Health and Safety Committee shall be established to review and make recommendations on health, safety and sanitary conditions which affect the well being of employees covered by this Memorandum.

A Chairman shall be selected to serve six (6) month intervals. The first such chairman shall be selected from among the union members and chairmanship shall then rotate to a selected city member for the next interval, etc. The Health and Safety Committee shall meet when deemed necessary or at least six (6) times a year and shall maintain accurate minutes of its recommendations, a copy of which shall be sent to the appropriate Division Director. Any recommendations of the Committee forwarded to the Division Director and not approved and implemented by the Division Director to the satisfaction of the Committee shall be submitted to and reviewed by a professional safety engineer selected and engaged by mutual agreement of the Committee. The services of such engineer shall be paid for by the City. The engineer will submit his decision and/or alternative solutions to the Committee and the Administration. The Administration in turn will choose one of the alternatives or combination thereof, and if funds are not available in the operating budget, it will be submitted to the City Council for appropriation. A union staff member may attend the Committee meetings and other guests by invitation of the Committee.

ARTICLE XVII
COMMUNICABLE DISEASE

In cases where employees are assigned to work in areas where they are exposed to communicable disease such as tetanus, typhoid, typhus or other similar diseases, and the employees contract such a communicable disease, the employees will be treated for that disease at the expense of the City and will not lose any benefits he or she would have otherwise received had that employee not contracted such disease.

The employer is obligated to furnish annual innoculations protecting against tetanus, typhoid, typhus, and influenza at the request of the employee.

ARTICLE XVIII
ON THE JOB INJURY

In the event any employee sustains an injury, illness or communicable disease as defined in Article 17, he shall be taken directly to the nearest facility where proper medical treatment can be obtained. The cost of the necessary hospital, doctor's care, prescriptions, and related medical expenses shall be paid by the City for all on the job injuries, and/or communicable diseases provided that the employee shall assign to the City those recoveries from any third party only to the extent necessary to reimburse the City for the expense paid. This assignment shall exclude the proceeds from any insurance policy solely paid for by the employee. Nothing shall deny an employee injured on the job who has been taken to the nearest doctor or facility for proper treatment from requesting the doctor of his or her own choice.

All on the job injuries will be subject to the provisions of Charter Section 188 of the Memphis City Charter and the employee shall submit to any reasonable examination by any physicians employed by the City. No charge will be made against accrued sick leave for absences caused by on the job injuries and/or communicable diseases. If an employee is injured on the job as defined herein, and leaves work prior to the end of his scheduled work period, he shall be paid for the remainder of that day.

If the City adopts a uniform voluntary workman's compensation plan, the same shall be applicable to employees covered by this Memorandum.

ARTICLE XIX
BULLETIN BOARDS

The employer agrees to provide reasonable bulletin board space where notices of official union matters may be posted by the union representatives. Bulletin boards shall be in conspicuous places and accessible to union officials.

ARTICLE XX
OVERTIME

Overtime shall be paid at the straight time regular rate of pay for all hours worked in excess of forty (40) hours per week; provided, however, that overtime shall not be compulsory or mandatory.

Overtime shall be offered according to seniority. If the most senior person declines to accept, then the next in seniority shall be offered, so that all employees in the same classification, in the same area have an equal opportunity to accept or decline overtime. The employees offered overtime work must be qualified to perform the work offered.

Employees who work seven (7) consecutive days will receive time and one-half for all hours worked on the seventh (7th) day. The City agrees to pay time and one-half (1½), should the Fair Labor Standards Act become applicable three (3) months prior to its effective date.

ARTICLE XXI
UNIFORMS

Two (2) seasonal uniforms, summer and winter, shall be provided for permanent field force employees at no cost to the employees. The style of the uniforms shall be decided by mutual accord no later than August 4, 1972.

All employees will be required to wear uniforms during working hours. Rain gear will be provided as required.

ARTICLE XXII
ARDUOUS, HAZARDOUS OR UNPLEASANT WORK

Any employee performing especially hazardous, arduous or unpleasant work will be paid a premium of six percent (6%) in addition to their regular rate of pay for all hours during which they are required to perform this type of work. This payment shall be in addition to any other rate that may apply to the job. The job classifications to which this provision will apply shall be mutually agreed upon by the Union and the Employer and become a part of this Agreement. If the parties cannot agree, the matter shall be submitted as a grievance at Step 4, of the grievance procedure.

ARTICLE XXIII
SHIFT DIFFERENTIAL

In addition to the established wage rates, the City shall pay to all employees working non-rotating shifts, reporting between 3 P.M. to 6 P.M. an hourly premium of .06 for all hours worked during this shift and for those employees reporting on a non-rotating shift beginning between 9 P.M. to 12 A.M., the City shall pay a premium of .13 for all hours worked during this shift.

ARTICLE XXIV
SHIFT PREFERENCES

Employees by classification shall be assigned to shifts according to seniority with the person having the highest seniority being given first choice as to shift, provided such employee is capable of performing the work. No employee may exercise shift preference more than two (2) times any one year.

The term "shifts" shall mean (a) day, or (b) afternoon, or (c) evening, as further defined in the Shift Differential Clause.

ARTICLE XXV
PAYROLL DEDUCTION OF UNION DUES

Permanent employees (non-probationary) of the City of Memphis may authorize payroll deductions for the purpose of paying union dues. No authorization shall be allowed for payment of initiation fees, assessments or fines. The procedure which shall be followed by all employees in authorizing deductions of Union dues shall be for each employee to execute a written assignment in the form attached hereto.

In the event the Union members vote to increase Union dues, the Union shall notify the City at least thirty (30) days prior to the effective date of the dues increase. The dues shall be deducted monthly in an amount certified by the Union and the aggregate deductions of all employees shall be remitted together with an itemized statement to the Treasurer of the Union by the tenth (10th) day of the succeeding month after such deductions are made. In addition, the City will submit monthly to the Union a listing of all new employees' names and addresses within the bargaining unit. The Union will indemnify, and hold the City harmless against any claims made and against any suits instituted against the City on account of payroll deduction of Union dues. The Union agrees to refund to the City any amounts paid to it in error on account of the payroll deduction provision upon presentation of proper evidence thereof.

The employees' earnings must be regularly sufficient after other legal and required deductions are made to cover the amount of the appropriate Union dues. When a member in good standing of the Union is in non-pay status for an entire pay period, no withholding will be made to cover that pay period from future earnings. In the case of an employee who is in non-pay status during only part of the pay period, and the wages are not sufficient to cover the full withholding, no deductions shall be made. In this connection, all other legal and required deductions have priority over Union dues. However, any employee who executed a written assignment authorizing payroll deduction prior to any authorized leave, shall upon returning on payroll have his dues deducted.

AUTHORIZATION FOR PAYROLL DEDUCTION

City of Memphis, Tennessee

By____________________________ Dept.________
(Please Print) Last Name-First Name-Initial

Address ______________________ Phone ____________
Street City Zip Code

I, the undersigned, hereby designate the American Federation of State, County and Municipal Employees, AFL-CIO, as my duly chosen and authorized representative on matters relating to my employment. I further request and authorize the deduction from my earnings each payroll period an amount sufficient to provide for the regular payment of the current rate of monthly union dues established by the AFSCME Local Union. The amount shall be so certified. The amount deducted shall be paid to the Treasurer of the Local Union, AFSCME. The authorization may be terminated by giving notice to the union according to the Union by-laws; the Union will in turn notify the City Payroll Office in writing of such cancellation, or this authorization will be cancelled upon termination of my employment.

Social Security No. ________ Signed ______________

ARTICLE XXVI
LIFE INSURANCE

In addition to free Life Insurance provided under the Death of An Employee Article, Life Insurance is offered as an optional benefit to City employees at a cost of 40% of the total cost. The City shall continue to pay 60% of the cost of this insurance. Amounts of insurance allowed under this plan are as follows:

Basic Hourly Earnings	Life Insurance
2.30 and below	$ 6,000
2.31 but less than 2.88	$ 8,000
2.88 but less than 3.46	$ 9,000
3.46 but less than 4.04	$10,000

ARTICLE XXVII
HOSPITALIZATION

The City agrees to continue to provide for employees the same benefits including the dreaded disease riders and other riders, as was provided under Blue Cross, Blue Shield, and the employee shall have the right to choose the hospital and/or doctor of his choice. The employee will pay 40% of the cost and the City will pay 60%.

The City agrees that during the term of this Memorandum the City and the Union may enter into joint discussions of employee health care needs such as hospitalization, surgical, dental, optical, out-patient, x-ray benefits which would serve to improve health services or benefits not now included or provided in the existing self-funded program. If improvements are made in the program, they shall be discussed beforehand with the Union and be made applicable to the employees covered by this Memorandum.

Major Medical benefits shall be increased to $20,000.00 annually and $40,000.00 lifetime.

ARTICLE XXVIII
WAGES

Wages shall be paid to employees covered by this Agreement according to the classifications shown in Appendix A, and the pay schedule shown in Appendix B.

ARTICLE XXIX
CONTRACTING AND SUB-CONTRACTING

During the term of this Agreement, the City will not contract out or sub-contract the work now being done by present employees covered by this Agreement unless substantial savings are effected for the general public.

The Union recognizes the right of the City to contract or sub-contract for any services or materials which it presently contracts or sub-contracts.

The City would request the contractor to bid based on offering employment to the effected employees in accordance with the seniority provisions of this Agreement and according to contractor's employee requirements. In addition, the City will offer jobs to the displaced employees, in accordance with the Seniority Article, in other departments and divisions and will seek employment for said employees with other governmental agencies in the County.

ARTICLE XXX
NO STRIKE

During the term of this Memorandum of Understanding, the Union agrees that it will not engage in, encourage, or approve any strike, slowdown or other work stoppage growing out of any dispute relating to the terms of this Memorandum of Understanding. The City agrees that it will not lock out employees during the term of this Memorandum of Understanding. The Union will take whatever lawful steps as are necessary to prevent any interruption of work in violation of this Memorandum of Understanding, recognizing with the City that all matters of controversy coming within the scope of this Memorandum of Understanding shall be settled by established grievance and arbitration procedure.

ARTICLE XXXI
SAVINGS CLAUSE

Should any Article, Section or portion of this Memorandum of Understanding be held unlawful and unenforcible by any court of competent and final jurisdiction, such decision of the court shall apply only to the specific Article, Section or portion involved and shall not invalidate the remaining portions of this Memorandum of Understanding.

ARTICLE XXXII
NOTICE

Any notice to be given by this Memorandum of Understanding to the City of Memphis or to the Union and not heretofore specified hereunder shall be given to the Personnel Director of the City in writing and by certified mail. Any notice to be given to the Union shall be in writing by certified mail addressed to the Executive Director, Local 1733, American Federation of State, County, and Municipal Employees, AFL-CIO, 280 Hernando, Memphis, Tennessee.

ARTICLE XXXIII
TRAINING PROGRAMS

The City and the Union recognize the need for the development and training of employees to fulfill the City's manpower requirements for maintaining the efficiency of operations, quality and service.

The City subscribes to the principles of career ladders and promotions from within its organization. In keeping with such principles the City shall join with the Union and establish training programs for employees covered by this agreement. It shall be the purpose of the training programs to upgrade the skills of employees and assure a more adequate number of qualified employees.

A joint training committee, consisting of not more than three members selected by the Union and an equal number selected by the City, shall be established. This committee may establish career ladders and training programs in keeping with the provisions of this Agreement. The committee's actions shall be based upon the criteria set forth below:

(1) Training is to be established for present employees.
(2) Training shall be held on employer's premises.
(3) Training shall be held during regular working hours and the employee shall be paid his regular rate of pay.
(4) The training program will include these three (3) types of training:
  (A) Classroom training to prepare employees for high school equivalency tests or other academic standards required for the job.
  (B) Classroom training in skills necessary to fulfill the job for which the employee is being trained.
  (C) On the job training.
(5) Selection of trainees shall be in accordance with seniority clause.
(6) Trainees will be guaranteed the job for which they were trained, after successful completion of the training program.
(7) Trainees shall receive one-half (½) of the salary increase after they have completed 50% of the program.
(8) The joint training committee may take no action that would be in conflict with or supersede this agreement.
(9) The committee shall determine the length of training and establish career ladders.
(10) The City agrees to inform the joint training committee of management's review of manpower requirements based on a semi-annual audit of contemplated increase in present service, new services to be added, and normal attrition of the work force.
(11) The joint training committee shall make a detailed analysis of employee training needs and make recommendations to the City regarding Federal manpower programs available which would fund the training programs.

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ARTICLE XXXIV
TERMINATION CLAUSE

This Memorandum of Understanding shall be effective as of the first day of July, 1972 and shall remain in full force and effect through the 30th day of June, 1975. It shall be automatically renewed from year to year thereafter unless either party shall notify the other in writing at least ninety (90) days prior to the anniversary date that it desires to modify this Memorandum of Understanding. In the event that such notice is given, meetings and conferences regarding its provisions shall begin at least sixty (60) days prior to the anniversary date or may begin sooner, but this Memorandum of Understanding shall terminate as of the termination date listed above unless extended by mutual agreement.

IN WITNESS WHEREOF, the parties agree and affix their signatures below:

LOCAL UNION 1733, AMERICAN FEDERATION OF STATE, COUNTY AND MUNICIPAL EMPLOYEES, AFL-CIO

Jesse Jackson
William H Green
Joe Taylor
Joseph Banks

CITY OF MEMPHIS:

APPENDIX A
JOB CLASSIFICATIONS
AND
PAY GRADES

Grade 5	Special Equipment Operator
Grade 4	Equipment Operator Vehicle Serviceman C. .w Chief
Grade 3	Truck Driver Utility Tractor Operator
Grade 2	Crewman Stock Clerk
Grade 1	Custodian Store Room Helper Watchman Yardman Street Sweeper

Special Equipment Operator includes the following operations:
1. Brush Picker

Equipment Operator includes the following operations:
1. Vac-all
2. Self-loading truck

Utility Tractor Operator includes the following operations:

1. Mower

APPENDIX B

The wage rates in effect during the term of this Memorandum shall be:

On 6-30-72 Employees at	7-1-72	7-1-73	1-1-74	7-1-74	1-1-75
		GRADE 1			
2.49 and above	.10	.13		.14	
2.48	2.61	2.74		2.88	
2.36 - 2.47	2.51	2.64	2.74	2.88	
2.21 - 2.35	2.41	2.54	2.64	2.78	2.88
2.06 - 2.20	2.21	2.34	2.50	2.64	2.88
Below 2.06	2.15	2.30	2.50	2.64	2.88
		GRADE 2			
2.62 and above	.10	.13		.14	
2.61	2.76	2.89		3.03	
2.47 - 2.60	2.66	2.79	2.89	3.03	
2.39 - 2.46	2.56	2.69	2.79	2.93	3.03
2.30 - 2.38	2.46	2.59	2.74	2.88	3.03
2.17 - 2.29	2.36	2.49	2.69	2.83	3.03
Below 2.17	2.26	2.39	2.64	2.78	3.03
		GRADE 3			
2.78 and above	.10	.13		.14	
2.73 - 2.77	2.92	3.05		3.19	
2.62 - 2.72	2.82	2.95	3.05	3.19	
2.52 - 2.61	2.72	2.85	2.95	3.09	3.19
2.51	2.67	2.80	2.95	3.09	3.19
2.42 - 2.50	2.62	2.75	2.85	2.99	3.19
2.40 - 2.41	2.57	2.70	2.85	2.99	3.19
2.30 - 2.39	2.52	2.65	2.80	2.94	3.19
Below 2.30	2.42	2.55	2.75	2.89	3.19

Continued..........

Appendix B continued:

On 6-30-72 Employees at	7-1-72	7-1-73	1-1-74	7-1-74	7-1-75
		GRADE 4			
3.18 and above	.10	.13		.14	
3.17	3.27	3.40		3.54	
3.06 - 3.16	3.21	3.34	3.40	3.54	
2.94 - 3.05	3.12	3.25	3.30	3.44	3.54
2.87 - 2.93	3.08	3.19	3.30	3.44	3.54
2.82 - 2.86	3.01	3.14	3.24	3.38	3.54
2.72 - 2.81	2.96	3.09	3.24	3.38	3.54
2.66 - 2.71	2.86	2.99	3.19	3.33	3.54
2.58 - 2.65	2.81	2.94	3.14	3.28	3.54
Below 2.58	2.71	2.84	3.09	3.23	3.54
		GRADE 5			
3.30 and above	.10	.13		.14	
3.26 - 3.29	3.40	3.53	3.58	3.72	3.77
3.09 - 3.25	3.20	3.33	3.48	3.62	3.77
Below 3.09	2.90	3.03	3.33	3.47	3.77

When any position not in the wage schedule is created or established by the City and is performed by employees covered by this Memorandum, the City and Union will establish the pay grade by mutual agreement and if the parties cannot agree, the matter will be submitted to arbitration. Positions listed in this wage schedule may not be changed in pay grade during the term of this Memorandum, except by mutual agreement.

The parties will determine by mutual agreement the minimum hire rates and progression to be effective after January 1, 1974.

APPENDIX C

Employees assigned to the following positions in the Sanitation Services Division shall receive the six per cent (6%) hazardous, arduous, unpleasant work premium while engaged as referred to in Article 22.

1. Truck driver and crewmen on dead animal truck.
2. Truck driver and crewmen on City of Memphis Hospital pick-up crew.
3. Crewmen handling refuse at the Scott Street incinerator.

June 30, 1972 Pension Letter of Intent

It is the intent of parties to review and discuss during the first year of the Memorandum the existing pension plan and social security system and if mutually agreed submit proposed changes. Such approved changes would become part of the existing Memorandum.

FOR LOCAL 1733, AFSCME FOR THE CITY

APPENDIX C

EFFECTIVENESS OF DISTRICTING AND ROUTING MODEL

APPENDIX C

LETTER FROM CHARLES BLACKBURN, DIRECTOR OF SANITATION TO COUNCIL SUBCOMMITTEE AND THE CAO, GERALD MOORE

As we discussed during our meeting of Wednesday, December 23rd, Mr. Gene Owen calculated that his fee should be based on savings of (1) increase in sanitation service which would cost the city $873,107.00, and (2) cash savings representing a reduction of overall personnel strength within the Sanitation Department while still achieving the realized level of service of $620,742.00, a total annual savings of $1,493,000.00. Mr. Owen used for comparison the months of May and June 1970 as opposed to the level of service obtained and personnel complement, recommended as of October 30, 1970. All other factors of the engineering study such as ordinance changes, elimination of 55 gallon drums, open gates, use of tote tubs, and the use of disposable containers for yard refuse are represented in the two broad figures mentioned above and he has claimed no separate savings for them.

The Public Works Division in evaluating these savings for your consideration recalculated the levels of service using the number of routes given twice weekly service throughout, by week, going back to July 1969 through June 1970 and then comparing these figures with service from July (i.e., when implementation of the new routes were started) through November 1970. Our figures indicate an increase of realization of twice weekly pickups from 74 percent to 88 percent or a 14 percent improvement.

It is our feeling that considering longer periods of time reflects seasonal variations and represents a truer picture of the results achieved. The 14 percent increase in service based on the collection costs of $.35 per stop gives us a dollar figure for increase in service of $490,000.00.

However, it must be remembered that it took several months to fully implement the new route changes and the number of stops receiving twice weekly service rose to 92 percent of the total during the month of November and will exceed 96 percent in December.

Taking the November figure as a mean between the average increase and the presently obtained level of service, we have an additional four percent service improvement. On top of this, we estimate an additional two percent increase in refuse volume based on national statistics. An additional six percent increase in the level of service or the cost of reaching that level would add an additional $209,000.00 annually. The Sanitation Department and Owen and White, Incorporated agreed on some personnel requirements that were omitted from Mr. Owen's report on September 1, 1970.with the result that salary savings have been reduced to $234,000.00 annually.

We recap our estimate of savings attributable to the engineering study as follows:

Service Improvement	$ 699,000.00
Salary Savings	234,000.00
19 packers not purchased as a result of the study at 1/3 the cost	71,000.00
Gasoline savings based on 2 months experience	9,000.00
Maintenance savings estimated only on the basis of gasoline reduction	26,000.00
Substitution of 15 brush trucks for 12 additional packers planned at 1/3 the cost	23,000.00
TOTAL Savings	$1,062,000.00

In addition to the above enumerated savings, the city should realize a personnel complement savings of approximately 45 men if the balance of apartments, 8 units and above, are assigned to private collectors - this is estimated to be $165,000.00 per year. In addition, there should be an additional savings if efficiency increases in the new route systems.

Based on savings to date and in accordance with our best estimates, we recommend payment to Owen and White, Inc. up to $105,000.00 based on his initial effort. We have paid him to date $55,000.00 so this would mean an additional payment of $50,000.00 which we will authorize immediately upon receipt of your approval. We have also advised Mr. Owen to proceed with the regeneration of the existing routes to bring them to current status.

APPENDIX D

MEMPHIS SOLID WASTE ORDINANCE

Chapter 19

GARBAGE AND TRASH*

Art. I. In General, §§ 19-1—19-28
Art. II. Permit for Collection by Pushcart, §§ 19-29—19-43

Article I. In General

Sec. 19-1. Definitions.

For the purposes of this article the following words and phrases shall have the meanings herein and words used in the present tense shall include the future tense and in the singular shall include the plural and the plural shall include the singular and masculine shall include the feminine gender:

Person. The word "person" shall mean every natural person, firm, partnership, association or corporation.

Director shall mean the director, sanitation services division, and/or director, public works division, whichever is appropriate.

Garbage shall include every accumulation of both animal and vegetable matter, liquid or otherwise, that attends the preparation, use, cooking, dealing in or storage of meat, fish, fowl, fruits or vegetables, tin cans or other containers originally used for food stuffs.

Rubbish includes all non-putrescible solid waste consisting of both combustible and non-combustible waste such as paper, cardboard, glass, crockery, excelsior, cloth and similar materials. It shall not include bulky refuse meaning stoves, refrigerators, water tanks, washing machines, broken furniture or similar bulky material having a weight greater than seventy-five (75) pounds and volume greater than thirty-five (35) gallons.

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*Editor's note—Ord. No. 187, enacted June 11, 1968, amended this Code by repealing §§ 19-1—19-18, by adding §§ 19-1—19-25 in lieu thereof. The repealed sections were derived from: Code 1949, §§ 483, 484, 485, 486, 487, 488, 489, 491, 492, 493, 494, 496, 497, 498, 499, 504, 798, 818, 1544, 1571; Ord. No. 984, § 2, 5-22-62. Subsection designations and italicized catch phrases have been inserted by the editors, where appropriate, to facilitate indexing and reference.

Public place shall include parks, docks, wharves, water or open adjacent spaces thereto and public yards, grounds and areas and all open spaces between buildings and streets and in view of such streets.

Industrial waste shall mean all such wastes peculiar to industrial, manufacturing or processing plants and shall include hazardous refuse.

Hazardous refuse means any chemical, compound, mixture, substance or article which may constitute a hazard to health or may cause damage to property by reason of being explosive, flammable, poisonous, corrosive, unstable, irritating, radioactive or otherwise harmful. (Ord. No. 187, 6-11-68; Ord. No. 1494, § 1, 10-17-72)

Cross references—Powers and duties of city beautiful commission relative to removal of trash from streets, lots, etc., § 2-225; disposal of refuse at airport, § 4-31; disposal of dead animals, § 7-24; incinerators for burning trash, § 17-7; storage and disposal of garbage and rubbish at food establishments, § 18-61; refuse from gashouses, § 32-30; accumulations of garbage and trash providing food or harborage for rats, § 32-79; garbage and refuse disposal at trailer courts, § 39-25.

Sec. 19-2. Exclusive collection.

It shall be unlawful for any person other than the City of Memphis to engage in the business of collecting, removing, and disposing of garbage and rubbish in the City of Memphis except those private collectors specifically authorized by permit. (Ord. No. 187, 6-11-68)

Sec. 19-3. Jurisdiction of director.

The removal of garbage, rubbish and industrial waste from premises in the city shall be under the jurisdiction of the director, sanitation services division. Final disposition of garbage, rubbish and industrial waste shall be under the jurisdiction of the director, public works division. (Ord. No. 187, 6-11-68; Ord. No. 495, § 1, 7-22-69; Ord. No. 1494, § 1, 10-17-72)

Sec. 19-4. Rules and regulations to implement articles.

The appropriate director, subject to the approval of the mayor, may make such rules and regulations as are not inconsistent with the provisions of this article as may be necessary or desirable to aid in the administration of and obtaining compliance with the provisions of this article. (Ord. No. 187, 6-11-68; Ord. No. 1494, § 1, 10-17-72)

Sec. 19-5. Collection and disposal of industrial waste, pathogenic and radioactive waste and salvageable materials for reclamation.

(a) *Industrial and hazardous waste.* All industrial and hazardous waste shall be disposed of by the industry, manufacturer or processing plant generating such waste under such methods and conditions as shall be approved by the director. Such industries may apply for a special permit as a private collector or may dispose of industrial waste by licensed private collectors. Garbage and rubbish not consisting of industrial waste and hazardous refuse may be collected by the city and charges made therefor in accordance with the fee set forth herein, provided, however, that if the person in disposing of his industrial and hazardous waste also desires to dispose of his garbage and rubbish generated on his premises, the city shall allow him to do so as a special private collector for his own premises or through licensed private collectors if he desires.

(b) *Pathogenic and radioactive waste.* All pathogenic and radioactive waste shall be disposed of by the hospital or institution generating such waste under such conditions as shall be approved by the health department. If the health department approves the treatment of such waste so that it may be disposed of by collections from the city, or if the hospital is eligible due to classification by volume, then said waste may be disposed of by the hospital as a special private collector or through licensed private collectors. Garbage and rubbish not consisting of pathogenic and radioactive waste may be collected by the city and charges made therefor in accordance with the fee set forth herein. Provided, however, that if the person disposing of his pathogenic or radioactive waste also desires to dispose of his garbage and rubbish generated on the premises, the city shall allow him to do so by granting a special permit to the hospital or institution if so classified by volume for itself as a special private collector or through use of a licensed private collector.

All pathological waste from physicians' clinics, dental clinics, blood banks and medical laboratories, shall be separate from normal waste, placed in durable disposable bags that can be tied and sealed when full. The bags shall be stored in metal containers with tightfitting lids while in the process of being filled. Containers shall be kept in places restricted from access by the public. Needles shall be separated from disposable syringes by breaking them off at the hub immediately after use. Fluids may be flushed down the commode. These materials shall only be placed at the collection point on the day they are to be collected. Storage, collection, and disposal of pathological waste shall be in accordance with regulations of the Memphis and Shelby County Health Department.

(c) *Salvageable materials for reclamation.* Persons engaged in collecting or purchasing for resale paper, cardboard, rags and scrap metals, for reclamation purposes shall be exempted from the provisions of this article except insofar as regulations of the health department and the sanitation services division apply to maintaining standards of health and cleanliness, preventing nuisances, preventing interference with refuse containers and preventing littering. (Ord. No. 187, 6-11-68; Ord. No. 495, § 1, 7-22-69; Ord. No. 704, § 1(A), (B), 5-12-70; Ord. No. 1494, § 1, 10-17-72)

Sec. 19-6. Container provided.

(a) *Duty to have containers.* It shall be the duty of every person in possession, charge or control of any premises where garbage is created or accumulated and in the case of multiple dwellings or multiple occupancy, the owner of the premises, at all times to keep or cause to be kept a sufficient number of containers for the deposit of garbage generated on the premises.

(b) *Container requirements.* Lids or covers of such containers shall be kept tightly closed at all times other than when garbage is being deposited therein or removed therefrom. Containers used for the deposit of garbage for collection by the city shall be in good condition so that collection thereof shall not injure the person collecting the contents. Containers having ragged or sharp edges or other defects must be promptly replaced. Individual (can type) containers provided shall be not larger than twenty-five (25) inches in diameter and thirty (30) inches in height nor smaller than fourteen (14) inches in diameter and sixteen (16) inches in height (commonly known as thirty (30) gallon and twenty (20) gallon containers). All individual (can type) containers shall be made of galvanized or plastic material and shall be kept watertight at all times. Sufficient additional containers shall be provided within the premises for receiving and holding without leakage and spillage all ashes, rubbish and waste matter other than garbage except as set forth in section 19-10.

(c) *Fifty-five gallon drums prohibited.* Fifty-five (55) gallon drums are specifically prohibited from use as containers for garbage or other refuse. It shall be the duty of both the person in possession, charge or control of any premises as well as the owner of the premises to comply with the provisions of this subsection regarding the cleanliness of the premises and keeping containers properly closed. (Ord. No. 187, 6-18-68; Ord. No. 495, § 1, 7-22-69; Ord. No. 723, § 1, 6-2-70)

Sec. 19-7. Safe premises for collection; location of containers.

It shall be incumbent upon tenants, lessees, occupants or owners of premises to provide a safe and convenient entrance to and through the premises for the purpose of collecting garbage. Containers for garbage and refuse to be collected shall be placed at a convenient and accessible point in the yard within five (5) feet of an alley, whenever an alley exists in the rear of such premises, and where no alley exists, the containers shall be placed at a convenient and accessible point adjacent to a drive or walkway. Containers shall be placed where collectors may pick up and empty same without attack from animals. The director may by regulations provide for the location of containers. City garbage collectors shall not enter houses or stores for the collection of garbage or rubbish nor shall they accept any money or valuable gifts for their service from persons served.

Where yards are fenced, a gate, suitable for passage of collectors and their equipment, the gate being a minimum width of forty (40) inches shall be left open to provide a safe and convenient entrance to and through the premises, provided that the director, sanitation services division may grant waivers of this section in cases of hardship. Garbage and refuse shall not be stored in close proximity to other personal effects which are not desired to be collected but shall be reasonably separated in order that the collectors can clearly distinguish between what is to be collected and what is not. (Ord. No. 187, 6-11-68; Ord. No. 723, § 1, 6-2-70; Ord. No. 1494, § 1, 10-17-72)

Sec. 19-8. Garbage wrapped; mixing with ashes, rubbish.

Garbage and other liquid substances shall not be kept in the same container with ashes or rubbish. All garbage shall be kept in a separate container conforming to the requirements of this article and shall be drained and separately wrapped before being placed in the container. (Ord. No. 187, 6-11-68)

Sec. 19-9. Sanitary landfills, other places of disposal and disposal fees.

The city may establish public dumps, sanitary landfills or other places of disposal as may be necessary, and no person shall use or be permitted to use any dump or sanitary landfill or other place of disposal except with the approval of the director and in accordance with the rules and regulations promulgated under this article. The council may by resolution establish or adjust fees for any persons using city dumps, sanitary landfills, incinerators or other collection stations.

All sanitary landfills, incinerators or other collection stations either within or without the city limits shall have disposal fees established, and all persons (other than persons in passenger type vehicles hauling refuse emanating from a private residence) shall pay a disposal fee of forty-five cents ($0.45) per cubic yard of refuse delivered to the disposal site. A transfer handling or incinerator disposal fee of sixty cents ($0.60) per cubic yard shall be charged at any transfer station or incinerator for all haulers (other than persons in passenger type vehicles hauling refuse emanating from a private residence), in addition to the above mentioned disposal fee.

The director shall be authorized to promulgate reasonable rules and regulations for the collection of said fees, including collection at the landfills, incinerators or other collection stations, or the sale of coupon books at one or more locations, with coupons to be given upon the presentation of a vehicle for dumping at the landfill, incinerator or other collection station. The director shall also make reasonable rules and regulations as shall be necessary to carry out the inspection, supervision and enforcement of dump fees.

Any vehicle presented for dumping shall be enclosed at the sides and the back and covered with a tarpaulin or methods established by the director so as to reasonably avoid spilling garbage or waste, disseminating odors, and attracting insects, and the director may establish such reasonable time when such vehicles may be presented for dumping. Vehicles which are not covered with a tarpaulin or other approved cover shall not be allowed to dump at the landfill, incinerator and/or transfer station.

Dirt, stand, gravel, broken bricks, concrete, rock, asphalt and similar material deemed by the director to be suitable cover for landfill use may be exempted from the dump fee. (Ord. No. 187, 6-11-68; Ord. No. 495, § 1, 7-22-69; Ord. No. 1494, § 1, 10-17-72)

Sec. 19-10. Leaves, grass, trimmings, trees and paper.

Leaves, grass cuttings and garden trimmings, weeds and roots from which all dirt has been removed shall be deposited in disposable containers adjacent to the front property line or at the back property line where alley pickup of garbage is provided or in the regular garbage container provided that it does not create an amount of refuse and rubbish substantially greater than normal so as to require the collector to make an extra trip to remove such refuse and rubbish, provided further that such refuse is loose in such regular container and not tightly compacted so as to cause difficulty to the collector in removing the same from the container. The director of sanitation services may grant waivers of this section in cases of hardship. Leaves may be neatly piled at the property line from which collections are normally made during such times in the fall and spring as set by regulations of the director. Disposable containers for such rubbish shall be cardboard cartons or plastic bags or moisture resistant paper bags and such containers shall have tops, ties or other means of preventing spillage, scattering or blowing away of the rubbish and be moisture proof or kept dry and be of sufficient strength to contain the refuse without spillage during handling. They shall not exceed in size the approximate capacity of a thirty (30) gallon regulation garbage container which is considered the maximum size for manual lifting by a collector.

Magazines and newspapers shall be bundled and securely tied.

Shrub and tree trimming shall be neatly piled adjacent to the front property line immediately behind the sidewalk where sidewalks are installed.

Shrubs and tree trimmings shall be separate from other refuse, such as leaves and grass trimmings.

Limbs or logs in excess of three inches in diameter and five (5) feet in length will not be collected by the city. (Ord. No. 187, 6-11-68; Ord. No. 495, § 1, 7-22-69; Ord. No. 723, § 1, 6-2-70; Ord. No. 1494, § 1, 10-17-72)

Sec. 19-11. Service fees for collection, disposal.

The following monthly fees are established for the collection, removal or disposal of garbage and rubbish:

	Monthly Fee
Residential units, including single family dwellings, mobile homes, duplex, triplex, quadruplex, and apartments of a total of eight (8) or more units with individual can type container collection authorized by regulations promulgated pursuant to this ordinance for each unit thereof (provided mobile homes in commercial mobile home parks of fifty (50) or more units with approved central collection containers shall pay for each unit thereof $2.00)	2.50
Apartment houses of five (5) through seven (7) units, for each unit thereof	2.00
Apartments of eight (8) or more units with containers suitable for mechanical collection as provided by regulations promulgated pursuant to this ordinance, for each unit thereof	2.00
Boardinghouses of three or more living quarters	6.00
Churches and other institutions (provided, however, that if the director determines that said churches and institutions should be rated on the basis of average gallons collected as provided for commercial establishments, the director shall thereafter direct that such churches and other institutions shall be billed for the amount appropriate to such commercial group except that churches having an average weekly gallon collection of from 0 to 90 gallons shall pay a monthly fee of $3.00 and churches having an average weekly gallon collection of 91 to 180 gallons shall pay a monthly fee of $6.00)	12.00

Commercial businesses and other non-residential purposes:

Group	*Weekly gallons*	*Monthly Fee*
1	0 to 180	$ 6.00
2	181 to 360	12.00
3	361 to 780	25.00
4	781 to 1,200	34.00
5	1,201 to 1,800	48.00
	1,801 to 3,600	79.00
	3,601 to 5,400	127.00
	5,401 to 7,200	174.00
	7,201 to 9,000	222.00
	9,001 to 10,800	269.00
	10,801 to 12,600	317.00

(Ord. No. 187, 6-11-68; Res. of 6-11-68; Ord. No. 267, § 1, 9-3-68; Ord. No. 298, § 1, 10-15-68; Ord. No. 860, § 1, 2-2-71)

Amendment note—Ord. No. 267, § 1, amended § 19-11, "churches and other institutions," by adding the exception relating to average weekly gallon collections. Ord. No. 298, § 1, amended § 19-11 "residential units" by adding the proviso relating to mobile homes. Ord. No. 860, § 1, amended the provisions pertaining to residential units and apartments.

Sec. 19-12. Classification of commercial businesses for collection services.

The director shall cause each commercial establishment to be placed in the particular group based upon the average collections per week. The director from time to time may change the classifications of a commercial establishment from one group to another. The decision of the director shall be final. (Ord. No. 187, 6-11-68)

Sec. 19-13. Special collection services.

The director may provide for the collection and removal of garbage and rubbish from any place or premises at times in addition to those when regular collection service is provided or in a manner different from the prescribed method of collection. In the event the director establishes such special service, the method of special service and the fee therefor shall be submitted to the council for approval by appropriate resolution.

In the event the director establishes such special service, the director shall have authority to charge the users of such special services a charge based on the division of public works' best estimate of their actual cost providing such service, including labor and equipment used, plus a fifteen cents ($0.15) per cubic yard permit fee to defray the costs of providing, operating and maintaining of dumps and sanitary land fills by the city. (Ord. No. 187, 6-11-68; Ord. No. 495, § 1, 7-22-69)

Amendment note—Ord. No. 495, § 1, amended § 19-13 by adding the second paragraph.

Sec. 19-14. Billing of service fee.

The service fee for removal of garbage or rubbish by the city shall be included as a separate item each month on the bills rendered by the Memphis Light, Gas and Water Division. Said charges shall be rendered on the first bill of the division sent on and after July 1, 1968, and for each month thereafter. All persons receiving sanitation service by the city who are not customers of the Memphis Light, Gas and Water Division shall be billed separately by the city. The account shall be paid monthly in advance to the person or department designated by the council by resolution.

Failure to pay the service fee within thirty (30) days after due date of the utility statement shall be grounds for terminating utility service by the Memphis Light, Gas and Water Division.

When service commences or ceases, applicable charges may be prorated. If electricity, gas, or water services or any of them, shall be supplied to a location, the occupant or tenant of which has vacated said premises, and the city is satisfied that there has been a termination of the need for garbage and rubbish collection, then the city, on application of the owner or agent therefor, may suspend liability for such charges, and said charges shall be reinstated with the next utility bill rendered to an occupant or tenant of the said premises. (Ord. No. 187, 6-11-68)

Sec. 19-15. Responsibility for collection charges.

In the case of premises containing more than one dwelling unit or place of business, and each is billed separately for utilities by the Memphis Light, Gas and Water Division, such fees will be billed to the person in possession, charge or control who is the customer of the Memphis Light, Gas and Water Division. In the case of premises containing more than one dwelling unit or place of business which are served by a single utility bill, so that the occupants or tenants cannot be billed separately by the Memphis Light, Gas and Water Division, such fees as are prescribed by this article shall be billed by the Memphis Light, Gas and Water Division to the customer of the single utility bill who shall be liable for the service fee for said premises. (Ord. No. 187, 6-11-68)

Sec. 19-16. Nurserymen; duty to remove trash.

Every nurseryman or other person who cuts trees or trims shrubs or grass as an independent contractor and not as an employee of the occupant of the premises, shall remove or cause to be removed all such trash from the premises serviced by him. (Ord. No. 187, 6-11-68)

Sec. 19-17. Building debris, responsibility for removal.

Building debris such as scrap lumber, plaster, roofing, concrete, brickbats, and sanding dust resulting from the construction, repair, remodeling or demolition of any building or appurtenances on private property will not be removed by the sanitation services division and the owner must cause such materials and waste to be privately moved. (Ord. No. 187, 6-11-68; Ord. No. 280, § 1, 9-10-68; Ord. No. 1494, § 1, 10-17-72)

Sec. 19-18. Private collection, authorized, regulated.

The director shall authorize the private collection of garbage and rubbish for a particular location only as hereinafter provided:

(a) The director shall not authorize the private collection of garbage and rubbish for single family, duplex, triplex and quadruplex residences, mobile homes, boarding houses, apartment buildings of seven units or less and commercial establishments in groups 1 and 2.

(b) The director may authorize the private collection of garbage and rubbish for commercial establishments in group 3 and churches and institutions by the issuance of a location permit upon the application of the person in possession or control of the premises or his agent whenever the director shall determine it is uneconomical for the city to provide collection or the city cannot give adequate service and a private collector can give adequate service. The collection shall be by a private garbage collector licensed under this article and suitable to the occupant of the premises.

The director in considering whether it is economical for the city shall take into consideration the location of the establishment, the sanitation collection routes, the available manpower, the equipment and manpower necessary for removal, times and cost studies by the city and all such other factors as may be necessary and proper to determine if it is economical or uneconomical for the city to provide said collection. In determing whether the city can give adequate collection service upon a request for a location permit, the director shall consider the feasibility of collection, the building design, city-owned equipment available and whether the location can best be served by containerized equipment and such other factors as the director may deem appropriate.

(c) The director shall authorize the private collection of garbage and rubbish for commercial establishments in groups 4 and 5, for governmental agencies and for industrial establishments by the issuance of a location permit upon the application of the person in possession or control of the premises or his agent whenever the director shall determine that a private collector can give adequate service. The collection shall be by a private garbage collector defined under this article and suitable to the occupant of the premises.

(c.1) The director shall authorize the private collection of garbage and rubbish for apartment buildings and complexes of eight (8) units or more by the issuance of a location permit upon the application of the person in possession or control of the premises whenever the director shall determine that a private collector can give adequate service. The collection shall be by a licensed private garbage collector defined under this article and suitable to the occupant of the premises who has obtained a special apartment permit for the collection of apartments. The location permits for collections of apartments shall be for collections on and after July 1, 1970 and all applications for private collection shall be filed with the director on or before June 15, 1970. Thereafter, applications for private collection shall be filed in like three (3) month periods, that is all applications shall be received on September fifteen for service effective October one in order to allow city proper times to adjust its existing sanitation routes because of removal of the apartment complex from collection by city forces.

A special apartment permit for the collection of apartments shall be issued by the director only to licensed private collectors who have obtained a permit for private collection under this article and in addition have signed an agreement with the city to handle any apartments of eight (8) or more units where application is made for their services. Any owner of an apartment building or complex of eight (8) or more units who contends he has been unable to obtain private collection services may apply to the director for private collection and the licensed private collectors shall agree that said apartment units may be assigned by the director to the private collectors on a rotating basis for collection at the standard rates filed with the director, that is, the rates for each pickup and furnishing of containers. The director shall have the authority to revoke immediately the special apartment permit for the handling of apartments of any private collector violating his agreement with the city.

(d) Notwithstanding any of the above paragraphs of this section any premises under contract to a private garbage collector at the date of the first reading of this article shall be allowed to continue said contract until July 1, 1969 and a location permit shall be granted and a permit granted to the private garbage collector upon his meeting the requirements set forth hereinafter. Said contract shall be allowed to continue after July

1, 1969 upon issuance of renewal location permits as defined in section 19-20 and as allowed under the provisions of this section.

(e) When private collection services are considered to be in the public interest, upon application, the director may recommend to the mayor that such service be provided by a licensed private collector. (Ord. No. 187, 6-11-68; Ord. No. 280, § 2, 9-10-68; Ord. No. 495, § 1, 7-22-69; Ord. No. 704, § 1 (J), 5-12-70)

Amendment note—Ord. No. 704, § 1(J), amended § 19-18 relating to private collection by deleting said section and substituting in lieu thereof a new § 19-18 pertaining to the same subject matter, the esssence of the amendment being the addition of provisions codified as (c.1) and (e).

Sec. 19-19. Private collection permits.

(a) *Application.* Any person desiring to secure a permit for the private collection of garbage, rubbish or industrial waste by either a licensed private collector or a special private collector on and after July 1, 1968 shall submit an application therefor to the collector of licenses and privileges who shall immediately forward the application to the director. The application shall contain the following information:

(1) Private collector's name, home address, business address, and telephone numbers. This includes information as to persons doing business under fictitious names, members of partnerships, and officers of corporations or associations.

(2) A list of equipment intended to be used by the private collector within the city including a full description thereof.

(3) The rates or charges to be imposed for private collection.

(4) The date upon which the applicant desires the permit to be issued.

(5) Proof of public liability insurance issued by a company authorized to do business in the State of Tennessee in the amount of $10,000.00 for death or injury to any one person in one accident, $20,000.00 for death or injury to more than one person in any one accident and $10,000.00 property damage.

(6) Such other and further information as the director may require.

(b) *Investigation and issuance.* The director shall cause such investigation to be made of the facts stated in the application and, if verified, shall without delay advise the collector of licenses and privileges to issue the private collector's permit upon payment of the fee.

(c) *Effective period, fee.* The private garbage collection permit shall be effective for the fiscal year beginning on July 1 until the next ensuing 30th day of June on and after which date it shall be null and void. The licensed private collector shall pay an annual fee of $240.00, which fee shall be prorated and paid at the rate of $20.00 per month in advance to the collector of licenses and privileges. The fee for a special permit issued to a private collector whose sole collection is a location owned by the private collector shall be $20.00 per annum payable annually in advance.

(d) *Conditions of issuing permit.* The director may impose conditions upon the issuing of a permit reasonably calculated to eliminate excessive noise, scattering of dust and dirt, scattered materials, and similar nuisances, and to prevent obstruction of public streets and interference with traffic.

(e) *Rules and regulations.* The director may make rules and regulations for the identification of private garbage collectors and their equipment. Every private garbage collector shall keep such records, receipts, invoices, and other pertinent papers in such form as the director may require which shall be open to the inspection by the city.

(f) *No vested right or property interest acquired; suspension, revocation; notice; hearings.*

(1) No vested right or property interest is acquired by the issuance to a licensed private collector of an annual permit or to a special permit issued to a licensed collector whose sole collection is a location owned by the private collector. Nor is there any vested right or property interest acquired by the issuance of a location permit to a particular location to be picked up by

a licensed private collector, but the annual permit or location permit may be suspended or revoked when it shall appear:

(a) That any of the conditions thereof are being violated;

(b) That the permit is being exercised in violation of this article or any ordinance or statute;

(c) That the permit is being used for a purpose detrimental to public health, morals, peace and order or is being used for a purpose foreign to that for which the permit was issued;

(d) For the nonpayment of the annual permit fee or the nonpayment of the location fee;

(e) That the application contains falsehoods;

(f) That the equipment being used by the private collector for collection or the containers used fail to meet the health and safety standards established by the City of Memphis, State of Tennessee or federal government.

(2) Ten days' written notice of suspension or revocation shall be given. Within said period of time the collector may ask for a hearing before the director. If no request for a hearing is made, the suspension for the period listed or the revocation shall be final. Hearings before the director shall be conducted informally, may be continued, and his decision shall be rendered within five (5) days after the close of said hearing. The decision of the director in regard to the issuance, suspension or revocation of private garbage collection permits shall be appealable to the city council under such rules and regulations as established by the council.

(g) *Payment bond.* The City of Memphis shall require of each private collector a bond to secure the payment of location permit fees, inspection fees and sanitary fill or dump fees. Said bond shall be in an amount determined by the director to be the average amount due from the private collector of said fees for a three (3) month period, and shall be based upon the director's estimate of said fees from the location permits submitted by the private collector and approved by the director. The director is authorized to increase or decrease the bond from time to time in his discretion as the number of location permits increase or decrease by the private collectors. (Ord. No. 187, 6-11-68; Ord. No. 495, § 1, 7-22-69; Ord. No. 704, § 1(K), 5-12-70; Ord. No. 1062, § 1, 9-28-71)

Amendment note—Ord. No. 495, § 1, amended § 19-19 by deleting (a) and substituting in lieu thereof the paragraph set out; by substituting "licensed private collector" in (c) in lieu of "private garbage collector" in the second sentence and by adding the word "special" before the word "permit" in the third sentence. Ord. No. 704, § 1(K), amended (f) by adding the provisions codified as (f)(1). Ord. No. 1062, § 1, added subsection (g) to § 19-19.

Sec. 19-20. Location permits.

(a) *Application.* Any private garbage collector who has secured a permit for the private collection of garbage, rubbish or industrial waste for either contract collection or special owner collection and who on and after July 1, 1968 desires to secure a permit for the collection from any particular location or premises within the City of Memphis shall submit an application for such collection to the collector of licenses and privileges for each location to be so collected. The application shall include the following information:

(1) The private collector's name and permit number.

(2) The address of the location where the materials will be collected and the nature of the activity thereon.

(3) The written approval of the request for a location permit by the operator or owner of the activity on the premises at the location for which collection will be made.

(4) The character and description of the materials to be collected.

(5) The proposed date the private collection is to begin.

(6) The number of collections anticipated per week or month.

(7) Equipment to be used.

(8) The rate or charge to be imposed for the private collection.

(9) Such other and further information as the director may require.

At the time of making application for a private collector's permit, the applicant may apply for location permits and the private collection and location permits may be issued simultaneously.

(b) *Investigation, notice of refusal.* The application shall be forwarded to the director who shall cause an investigation to be made of the facts stated in the application and shall authorize the issuance of the location permit within ten (10) days of the filing thereof provided he makes the findings required by this article. Whenever the director refuses the location permit, he shall immediately notify the applicant in writing of this refusal.

(c) *Fees, computation.* A disposal fee, as set forth in section 19-9, and a location permit fee shall be charged to defray the costs necessary to provide places of disposal and the cost of necessary inspections and maintaining the general cleanliness of the city. The fees shall be chargeable to the location, collected by the licensed private collector or the special private collector and paid to the city by the tenth of the month following the month services were provided by said collector. The owner or operator when he requests the issuance of a location permit for private collections shall agree to pay the location permit fee and disposal fee to be collected by the private collectors as provided herein. The location fee shall be as follows:

(1) Fifty cents ($0.50) per apartment per month for apartment buildings and complexes.

(2) Fifty cents ($0.50) per commercial or industrial unit per month.

(d) *Renewals.* The location permit shall remain effective without express renewal until such time as the conditions under which the application was approved have changed to such an extent as to render the permit invalid with respect to the requirements of this section and section 19-18. When such location permits are determined by the director to be invalid the director shall immediately notify the applicant in writing. (Ord. No. 187, 6-11-68; Ord. No. 495, § 1, 7-22-69; Ord. No. 572, § 1, 10-28-69; Ord. No. 704, § 1(L), 5-12-70; Ord. No. 1494, § 1, 10-17-72)

Sec. 19-21. Nuisances prohibited, compliance with article required.

It shall be unlawful for any person in possession, charge of or control of any premises to keep, cause to be kept, or allow the keeping on any premises within the corporate limits of the City of Memphis of garbage or rubbish in such manner that it will become offensive or deleterious to health or likely to cause disease and the same is hereby declared a public nuisance. The health department, police department and supervisory employees of the sanitation services division are hereby authorized to inspect any premises in the City of Memphis and its police jurisdiction for the purpose of seeing that the requirements of this article are being complied with. (Ord. No. 187, 6-11-68; Ord. No. 704, § 1(F), 5-12-70; Ord. No. 1494, § 1, 10-17-72)

Sec. 19-22. Interference with containers.

(a) No person other than the owner or person lawfully in control of any premises, or any authorized employee of the city or an authorized employee of a person licensed by the city for the collection or removal of garbage or rubbish, shall interfere in any manner with a container used for the accumulation or handling of garbage or rubbish or remove any such container from the location where it shall have been placed by the owner or person lawfully in control of the premises; nor shall any such person remove the contents from any such container.

(b) It shall be unlawful for any person, firm or corporation to deposit or permit or suffer its agents, servants or employees to deposit household or commercial wastes in or about the anti-litter cans or like receptacles provided by the city in various public places in the community. (Ord. No. 187, 6-11-68; Ord. No. 704, § 1(G), 5-12-70)

Sec. 19-23. Place for disposal of waste materials.

It shall be unlawful for any person to dispose of or cause to be disposed any garbage, rubbish or other waste materials upon any property other than a garbage dump or sanitary landfill so designated by the city. (Ord. No. 187, 6-11-68)

Sec. 19-24. Littering prohibited.

It shall be a misdemeanor for any person to place any garbage, straw, dirt, chips, shells, nails, iron, glass, fruit peelings, melon rinds, paper, shavings, rags, gravel, brick, building debris or other rubbish or other obnoxious substance on any street, sidewalk, alley, public park, parkway, square or other place in the city or on the property of another person, or to violate any of the requirements of sections 19-21, 19-22, and 19-23, hereof. (Ord. No. 187, 6-11-68; Ord. No. 704, § 1(H), 5-12-70; Ord. No. 1494, § 1, 10-17-72)

Cross references—Provisions of traffic regulations relative to deposit of glass, nails, etc., in streets, § 23-15; spilling rubbish from vehicles, § 23-124; parks, Ch. 25; streets, Ch. 36; duty of property owners to keep sidewalks clear of trash, § 36-104.

Sec. 19-25. Collection services subject to health department regulations.

The handling, collection and disposition of all garbage, refuse, rubbish and waste shall be subject to the regulations of the department of health which is charged with the duty of seeing to it that the public health shall not be endangered in the handling, storage or disposal of such refuse matter. (Ord. No. 187, 6-11-68)

Sec. 19-26. Sanitation fund.

All funds received by the City of Memphis from the garbage fee whether billed by utilities or collected by the City of Memphis for permit fees or location fees or sanitary dump fees shall be placed by the comptroller of the City of Memphis in a special fund entitled "Sanitation Service Fee". Said fund shall be used solely by the City of Memphis to pay for the cost of sanitation services including all salaries of the sanitation department and all necessary capital expenditures for equipment and all other necessary and reasonable charges for the sanitation department, it being the intention of this article as previously set forth from its inception that said funds shall be used to defray the cost of collection and disposal of garbage and other refuse in the City of Memphis. (Ord. No. 704, § 1(I), 5-12-70)

Secs. 19-27—19-28. Reserved.

Article II. Permit for Collection by Pushcart

Sec. 19-29. Definition.

For the purpose of this article, the term "pushcart" shall mean any pushcart, wheelbarrow or other vehicle which is not self-propelled.

Sec. 19-30. Required.

No person shall operate a pushcart within the limits of the city for the purpose of gathering garbage, paper, refuse or other discarded materials, without a permit from the chief of police. (Code 1949, § 1344)

Sec. 19-31. Application generally.

Application for the permit required by this article shall be made, in writing, to the chief of police. Such application shall set forth the name, residence address, and business address, if any, age, color, weight, color of hair, color of eyes, and citizenship of the applicant, together with a designation of the purposes for which he desires to operate such pushcart. (Code 1949, § 1345)

Sec. 19-32. Investigation of application.

Upon the filing of an application for a permit under this article, the chief of police shall make an investigation to ascertain the truthfulness of the facts set forth therein. (Code 1949, § 1345)

Sec. 19-33. Fee.

For receiving and filing each application for a permit under this article, the chief of police shall receive from each applicant a fee of fifty cents ($0.50) which shall be used to defray the cost of issuing the permit and tag and making the necessary investigation. (Code 1949, § 1346)

Sec. 19-34. Issuance.

If the chief of police is satisfied that the applicant for a permit under this article is properly identified and desires to operate a pushcart for lawful purposes, he shall issue the permit for the operation of such pushcart between daylight and dark only. (Code 1949, § 1345)

Sec. 19-35. Term; contents.

A permit issued under this article shall be valid for a period of one year from date, and shall bear the name, residence address, business address and other identification of the holder thereof, and the number of the permit. (Code 1945, § 1345)

Sec. 19-36. Renewal.

Permits issued under this article may be renewed annually by the chief of police, upon the payment of a renewal fee of twenty-five cents ($0.25) by the endorsement of the chief of police thereon, noting such renewal. (Code 1949, § 1347)

Sec. 19-37. Issuance of tag.

With each permit issued under this article, the chief of police shall issue a tag for the pushcart covered by the permit, such tag to bear the same identification number as the permit. (Code 1949, § 1345)

Sec. 19-38. Permit to be carried at all times; tag to be displayed on vehicle.

Each operator of a pushcart shall at all times while engaged in the operation of same, carry his permit with him and have securely affixed to the pushcart the tag issued to him under this article. (Code 1949, § 1348)

Sec. 19-39. Permits operation only between daylight and dark.

No permit shall be issued to operate a pushcart before daylight or after dark, and each permit shall clearly state that it is to be used only between daylight and dark. (Code 1945, § 1349)

Sec. 19-40. Not transferable.

No permit or tag issued under this article shall be transferable. It shall be unlawful for any person other than the permittee named therein to use, exhibit or claim to be the holder of such permit, or for any lawful holder of such permit to give away, lend or attempt to transfer such permit to another. (Code 1949, § 1349)

Sec. 19-41. Violation of terms.

It shall be unlawful for any person to operate a pushcart in violation of any of the terms or conditions of the permit issued to him under this article. (Code 1949, § 1349)

Sec. 19-42. Alteration.

It shall be unlawful for any person other than the chief of police or his duly authorized agent to change, remove or obliterate any entry made upon a permit or tag issued under this article. (Code 1949, § 1349)

Sec. 19-43. Revocation.

The chief of police may revoke any permit issued under this article for the violation of any of the terms and conditions of the permit, or for any violation of any of the provisions of this article, or for the violation of any other ordinance of the city or law of the state. The action of the chief of police in revoking such permit shall be final unless the permittee appeals from the action of the chief of police to the board of commissioners within two (2) days after such revocation. In case of appeal, the permittee shall be notified of the time and place of hearing and shall be afforded an opportunity to be heard and to present witnesses. The board of commissioners shall make such order as the facts justify and its ruling shall be final and binding on all parties. When revoked, the permit and tag issued shall be surrendered to the chief of police. (Code 1949, § 1350)

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